

# The rise and rise of the global balance sheet

How productively are we using our wealth?

Executive summary



# McKinsey Global Institute

Since its founding in 1990, the McKinsey Global Institute (MGI) has sought to develop a deeper understanding of the evolving global economy. As the business and economics research arm of McKinsey & Company, MGI aims to help leaders in the commercial, public, and social sectors understand trends and forces shaping the global economy.

MGI research combines the disciplines of economics and management, employing the analytical tools of economics with the insights of business leaders. Our “micro-to-macro” methodology examines microeconomic industry trends to better understand the broad macroeconomic forces affecting business strategy and public policy. MGI’s in-depth reports have covered more than 20 countries and 30 industries. Current research focuses on seven themes: growth and competition; labor markets and work; financial markets and investment; consumers, behavior, and health; resources and sustainability; technology and innovation; and society and institutions. Recent reports have assessed the impact of the COVID-19 crisis on the future of work, productivity and growth, and consumer demand; prioritizing health; the social contract; Black economic mobility; the impact of AI; the Bio Revolution; physical climate risk; the impact of corporations on the economy and households; and global value chains.

MGI is led by three McKinsey & Company senior partners: co-chairs James Manyika and Sven Smit and director Jonathan Woetzel. Michael Chui, Mekala Krishnan, Anu Madgavkar, Jan Mischke, Jaana Remes, Jeongmin Seong, and Tilman Tacke are MGI partners. Project teams are led by the MGI partners and include consultants from McKinsey offices around the world. These teams draw on McKinsey’s global network of partners and industry and management experts.

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November 2021

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# Preface

As the world looks to rebound from the COVID-19 pandemic, an understanding of the health and resilience of the global economy can help inform the decisions of business leaders and policy makers as they work to shape the recovery.

Even before the pandemic, the adequacy of traditional tools of economic and financial assessment had come under scrutiny. This report inaugurates a new line of research at the McKinsey Global Institute with foundational analysis of national balance sheets that complements other methodologies. National debt levels have risen markedly during the pandemic, giving new importance to balance sheet data that provide perspectives on the composition of national wealth and debt adequacy across countries. This research raises questions that we intend to explore in follow-on work, and we hope it will contribute to the discussion of ways to strengthen economic prosperity in the postpandemic era.

The research was led by Jonathan Woetzel, a McKinsey senior partner and MGI director in Shanghai, Jan Mischke, an MGI partner in Zurich, Anu Madgavkar, an MGI partner in New Jersey, Eckart Windhagen, a McKinsey senior partner in Frankfurt, Sven Smit, a senior partner in Amsterdam and co-chair of MGI, Michael Birshan, a senior partner in London, and Szabolcs Kemeny, a director of client capabilities in Budapest. Rebecca J. Anderson led the working team, which comprised Mohammed Abo Taleb, Olivier Bus, Jakob Graabak, Adrian Grad, Kenton Hoyem, Gabriela Hrasko, Joel Kirshner, Yifei Liu, and Arvind Vasudevan.

We are particularly indebted to Hans-Helmut Kotz, resident fellow, Center for European Studies at Harvard University, and senior fellow, Leibniz Institute for Financial Research SAFE in Frankfurt, Germany, for his extensive guidance, counsel, and good humor throughout the ten months of this research.

We also would like to thank our other academic advisers on this research project for their many important contributions. They are Martin Baily, senior fellow in economic studies at the Brookings Institution; Dag Detter, principal of Detter & Co and co-author of *The Public Wealth of Nations*; Rakesh Mohan, president and distinguished fellow at the Centre for Social and Economic Progress in Delhi, India; Andrew Sheng, chairman, the George Town Institute of Open and Advanced Studies, Penang, Malaysia; Michael Spence, William R. Berkley Professor of Economics, Leonard N. Stern School of Business at New York University; and Laura Tyson, distinguished professor at the graduate school of the Haas School of Business at the University of California, Berkeley.

We also thank our discussion partners, who provided valuable input and challenge to some of our preliminary results, including Ian Ball, professor at the School of Accounting and Commercial Law, Victoria University, Wellington, New Zealand; Diane Coyle, co-director, the Bennett Institute for Public Policy at the University of Cambridge; Monika Grzegorzczuk and Guntram B. Wolff, respectively research assistant and director of Bruegel in Brussels, Belgium; Catherine L. Mann, former global chief economist at Citibank and former chief economist at the Organisation for Economic Co-operation and Development; Raghuram Rajan, former governor of the Reserve Bank of India and distinguished service professor of finance at the University of Chicago Booth School of Business; Adam Posen and his colleagues at the Peterson Institute for International Economics in Washington, DC; and Axel Weber, chairman of the Institute of International Finance and UBS Group AG.

We are grateful for the valuable input from international organizations and the national statistics offices of all ten countries in our sample. In particular, we would like to thank the following: at the European Central Bank, Maciej Anacki, team lead and economist-statistician; at the OECD's Statistics and Data Directorate, Pierre-Alain Pionnier, head of section, productivity, labour, and price statistics, Bettina Wistrom, head of unit, annual national

accounts, Isabelle Ynesta, senior statistician, financial statistics, Belen Zinni, head of unit, productivity, and Jorrit Zwijnenburg, head of section, sectoral and national accounts; at the National Institute of Statistics and Geography in Mexico, José Arturo Blancas Espejo, director general of economic statistics, Francisco Guillén Martín, deputy director general of national accounts, and Angel Fernando Pineda Solis, director of national accounts; at HM Treasury in the United Kingdom, Sue Connaughton, deputy director, balance sheet analysis, Tom Josephs, director, fiscal, and Graham Prentice, senior policy adviser and head of balance sheet analysis; at the UK Office for National Statistics, Marianthi Dunn, head of capital stocks and the national balance sheet, Kristofer Johannsson, senior analyst, Tusan Nguyen, assistant economist, and Kelly Thomas, statistical officer; at the Bureau of Economic Analysis in the United States, Dylan Rassier, chief, national accounts analysis and research, and David Wasshausen, chief of the Expenditure and Income Division, national accounts.

While we benefited greatly from the variety of perspectives we gathered from these experts and advisers, our views have been independently formed and articulated in this report.

Several McKinsey colleagues provided valuable expert input that helped shape our thinking. MGI partner Mekala Krishnan served as our research “challenger.” We also thank Tera Allas, Rima Assi, Luciano Di Fiori, Miklos Dietz, Jonathan Dimson, Karilyn Farmer, Marc Goedhart, Naoyuki Iwatani, Tim Koller, Jeffrey Lorch, Ryan Luby, James Manyika, Hasan Muzaffar, Stefano Napoletano, Rob Palter, Aleksander Petrov, and Joydeep Sengupta.

MGI senior editor Stephanie Strom and editorial director Peter Gumbel edited and produced this report, together with operations manager Vasudha Gupta and senior graphic designers Marisa Carder, Jonathon Rivait, and Patrick White. Nienke Beuwer and Rebeca Robboy, MGI directors of external communications, helped disseminate and publicize the research. We are grateful to knowledge specialist Tim Beacom and Deadra Henderson, MGI's manager of professional development and operations, for their support.

This report contributes to MGI's mission to help business and policy leaders understand the forces transforming the global economy. As with all MGI research, this research is independent and has not been commissioned or sponsored in any way by business, government, or other institution. We welcome your comments at [MGI@mckinsey.com](mailto:MGI@mckinsey.com).

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# The rise and rise of the global balance sheet

While the state of economies is usually measured by GDP or other metrics of economic flows, this research examines the balance sheets of ten countries representing more than 60 percent of global income: Australia, Canada, China, France, Germany, Japan, Mexico, Sweden, the United Kingdom, and the United States. This view highlights a dual paradox: bricks and mortar make up most of net worth, even as economies turn digital and intangible, and balance sheets have expanded rapidly over the past two decades, even as economic growth has been tepid. How countries and companies adjust to this divergence between wealth and GDP, find 21st-century stores of value, and address growing financial imbalances will determine the future course of the global economy and our wealth.

**The market value of the global balance sheet tripled in the first two decades of this century.** Each of its three components—real assets and net worth; financial assets and liabilities held by households, governments, and nonfinancial corporations; and financial assets and liabilities held by financial corporations—grew from about \$150 trillion in 2000, or about 4 times GDP, to about \$500 trillion, or about 6 times GDP in 2020.

**The world has never been wealthier, with large variations across countries, sectors, and households.** Net worth is the store of value that determines wealth and supports the generation of future income. At the consolidated global level, it is equivalent to the value of real assets because all financial assets are matched by corresponding liabilities so that they net out. Net worth tripled between 2000 and 2020 to \$510 trillion, or 6.1 times global GDP, with China accounting for one-third of global growth. Households are the final owners of 95 percent of net worth, half in the form of real assets,

mostly housing, and the rest in financial assets such as equity, deposits, and pension funds. Net worth per capita ranged from \$46,000 in Mexico to \$351,000 in Australia in our sample. In China and the United States, the top 10 percent of households owned two-thirds of wealth.

**Two-thirds of global net worth is stored in real estate and only about 20 percent in other fixed assets, raising questions about whether societies store their wealth productively.** The value of residential real estate amounted to almost half of global net worth in 2020, while corporate and government buildings and land accounted for an additional 20 percent. Assets that drive much of economic growth—infrastructure, industrial structures, machinery and equipment, intangibles—as well as inventories and mineral reserves make up the rest. Except in China and Japan, non-real estate assets made up a lower share of total real assets than in 2000. Despite the rise of digitization, intangibles are just 4 percent of net worth: they typically lose value to competition and commoditization, with notable exceptions. Our analysis does not address nonmarket stores of value such as human or natural capital.

**Asset values are now nearly 50 percent higher than the long-run average relative to income.** Net worth and GDP historically moved in sync at the global level, with country-specific deviations followed by corrections, as in Japan in 1990. However, in the countries in our sample, net worth in 2020 was nearly 50 percent higher relative to income than the long-run average between 1970 and 1999. Asset price increases above inflation propelled by low interest rates drove this divergence, while saving and investment accounted for only 28 percent of net worth growth. In 2000–20, annual post-inflation

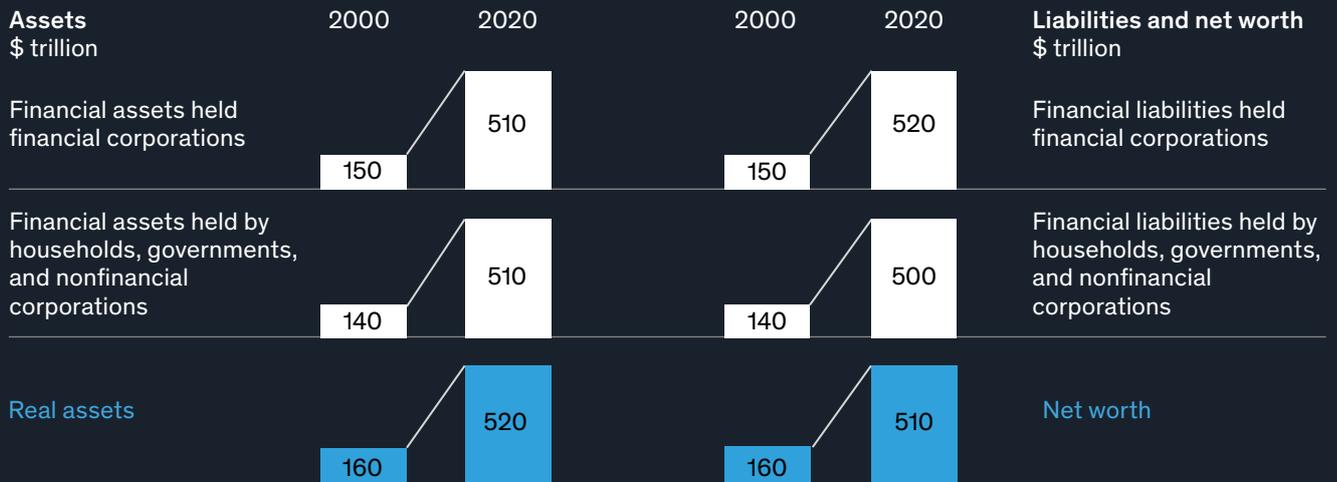
valuation gains quadrupled compared with earlier decades and almost caught up with the returns from the operation of assets, which declined.

**For every \$1 in net new investment, the global economy created almost \$2 in new debt.** Financial assets and liabilities held outside the financial sector grew much faster than GDP, and at an average of 3.7 times cumulative net investment between 2000 and 2020. As asset prices rose, economy-wide loan-to-value (LTV) ratios, which compare debt to produced assets, remained constant at about 80 percent on average, but exceeded 100 percent in Canada, Japan, and the United Kingdom. While the cost of debt declined sharply relative to GDP, thanks to lower interest rates, high LTV ratios raise questions about financial exposure and how the financial sector allocates capital to investment.

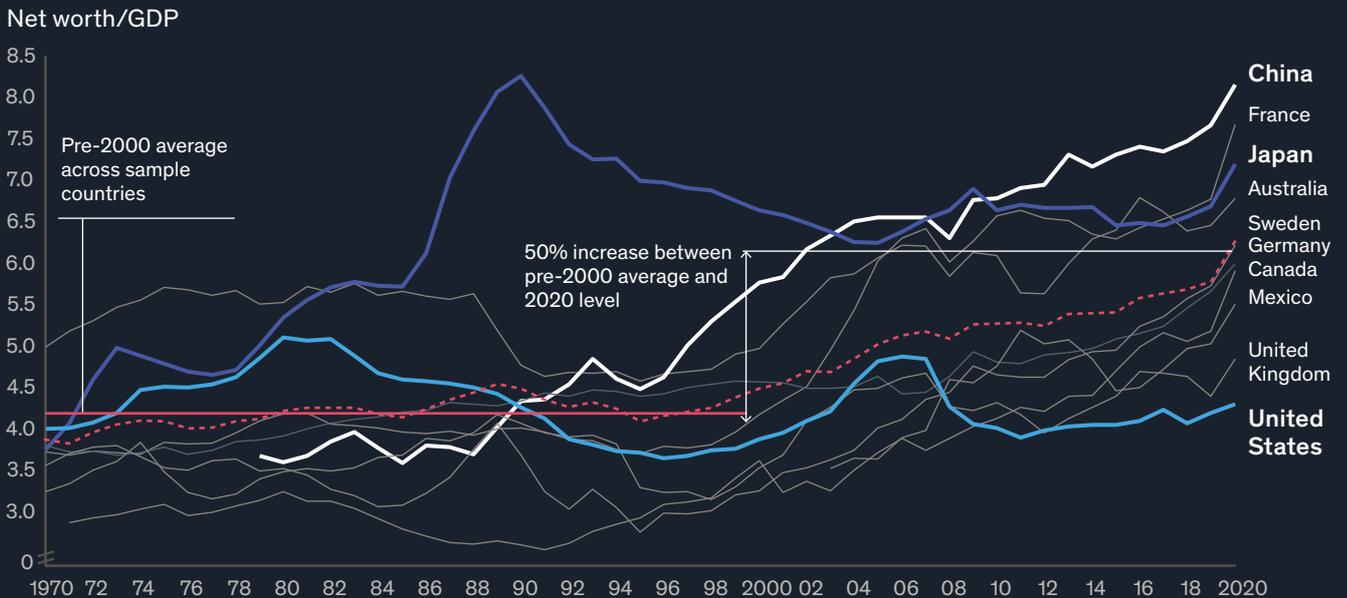
**How may the future unfold, and what can economic actors do?** We see three potential scenarios: (1) a new paradigm in which the value of assets relative to income is higher, in part because of demographic changes and a higher propensity to save among high-income households; (2) a mean reversion in asset prices; and (3) a rebalancing of the balance sheet relative to income from faster GDP growth as investment and productivity growth accelerate along with inflation. Households, corporates, financial institutions, and policy makers could assess and stress test the impact of those scenarios on their own balance sheets, find markers for how the economy will evolve, and hedge downsides while benefiting from upsides. Growing out of any potential imbalance would require all economic actors to redirect capital into productive and growth-enhancing investments such as sustainability, affordable housing, digital infrastructure, and yet-to-be-discovered 21st-century stores of value for savers.

# A balance sheet for the global economy

The global balance sheet has more than tripled in size in the past 20 years

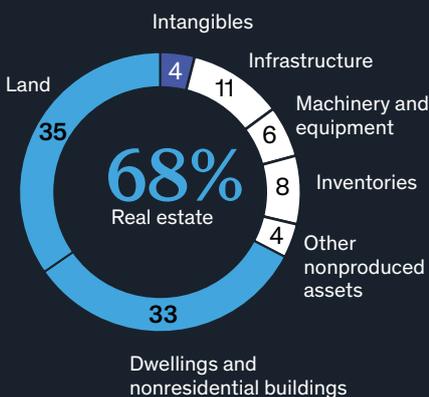


Net worth has grown much faster than GDP since 2000, with variations by country

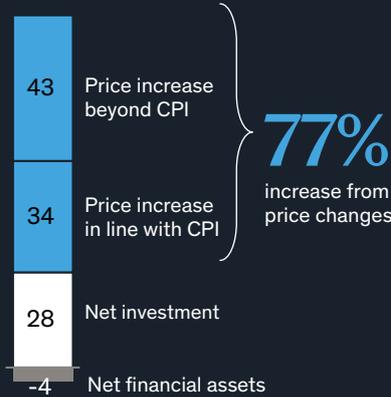


## Composition and growth of net worth

Distribution of real assets global average, 2020, %



Drivers of net worth growth 2000-20, %



## Net investment vs liabilities

2000-20, \$ trillion





# Executive summary

In this research, we borrow a fundamental tool from the corporate world—the balance sheet—to take stock of the underlying health and resilience of the global economy. This view complements more usual approaches based on GDP or other economic flows. It provides an in-depth look at the state of the global economy after two decades of turbulence, notably the 2008 financial crisis and its aftermath, more than a decade of ultra-low interest rates and heavy central bank intervention, and, most recently, the COVID-19 pandemic.

We focus on ten countries that together account for about 60 percent of global GDP: Australia, Canada, China, France, Germany, Japan, Mexico, Sweden, the United Kingdom, and the United States (see Box E1, “Our research approach, key concepts, data sources, and limitations”).

# 50%

Increase in asset prices since 2000 over the long-run average

A central finding from this analysis is that, at the level of the global economy, the historical link between the growth of wealth, or net worth, and the value of economic flows such as GDP no longer holds. Economic growth has been sluggish over the past two decades in advanced economies, but net worth, which long tracked GDP growth, has soared in relation to it. This divergence has emerged as asset prices rose sharply—and are now almost 50 percent higher than the long-run average relative to income. The increase was not a result of 21st-century trends such as the increasing digitization of the economy. Rather, in an economy increasingly propelled by intangible assets, a glut of savings has struggled to find investments offering sufficient economic returns and lasting value to investors.<sup>1</sup> These (ex-ante) savings have instead found their way into a traditional asset class, real estate, or into corporate share buybacks, driving up asset prices. At the same time, the growth in financial assets and liabilities has mirrored that of real assets, whether in response to or as a reason for real asset price increases.

Should we celebrate these trends or worry about them? Wealth as measured by net worth is rising fast. Yet the divergence between net worth and GDP raises some critically important questions for policy makers and business leaders. Foremost among them: is society in the throes of a paradigm shift as today’s world uncovers new sources of wealth? Why has this rise in net worth not resulted in sustainable increases in economic flows? Is there a risk of reversion to the historical mean, which would potentially entail a sharp decline in net worth and a knock-on effect on financial markets? What new 21st-century stores of value may emerge?

In this research, we seek to create an analytical foundation, a diagnostic accounting that will support further research into the health of the world’s economy, as well as provide a useful framework for answering such questions.

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<sup>1</sup> See *Getting tangible about intangibles: The future of growth and productivity?*, McKinsey Global Institute, June 2021, [McKinsey.com](https://www.mckinsey.com); and Lukasz Rachel and Lawrence H. Summers, *On secular stagnation in the industrialized world*, National Bureau of Economic Research, working paper number 26198, August 2019.

## Our research approach, key concepts, data sources, and limitations

We sought to complement GDP or flow-based approaches to economic analysis by building an integrated global balance sheet of all types of assets and liabilities, over time, and across countries.

National balance sheets measure financial assets, liabilities, real assets, and net worth as the sum of all assets minus liabilities in the household, government, nonfinancial corporate, and financial sectors. Financial assets and liabilities include all types of financial instruments like savings accounts and bank deposits, fixed-income securities like bonds, equity, pension assets, and derivatives (but not pay-as-you-go pension systems). Real assets include natural endowments like land and natural resources, which are not the result of a production process, as well as produced assets like dwellings and buildings, infrastructure, machinery and equipment, precious metals, and intellectual property products, which are also referred to as intangible assets.

This work aims to provide a balance sheet of the financial and real economy at current market prices. In line with national accounting guidelines in the 2008 System of National Accounts, we focus on the private market value of assets and intentionally show and analyze asset price effects rather than adjust for them.<sup>1</sup> This analysis does not account for externalities or societal value beyond private value—in other words, it excludes assets like natural capital (for instance, biodiversity) and human capital, and assumes that intangibles quickly lose commercial value due to competition. In many

analyses, we normalize the market value of balance sheet items or net worth by nominal GDP to adjust for size and income levels of countries and also because income must eventually underpin the value of assets. We do not adjust for different asset price levels across countries.

The primary component of our data, stocks of financial and real assets that compose balance sheets, comes from the Organisation for Economic Co-operation and Development (OECD), Federal Reserve Board, CEIC, and national statistics offices. In some cases, adjustments and extrapolations were needed, particularly for the United States and China. Limitations of these data sources include varying accounting assumptions like depreciation rates on structures, different methodologies for estimating land values, large uncertainty about estimating the value of unlisted equity, as well as a likely undercounting of public assets.<sup>2</sup>

This research marks our first attempt to create and analyze a global balance sheet. We consider this a useful frame of reference to better understand the context in which corporate leaders and policy makers operate. For instance, it helps develop a better understanding of what underpins household and national net worth and where we store value, including the role of intangibles. It also helps explain how net worth is formed and rises and falls over time and across countries. This in turn provides insight into the sustainability of wealth accumulation, pension systems, and the dynamics of wealth concentration, among

others. A balance sheet approach also provides a complementary view of the role of the financial system, including how leveraged our economies are in aggregate beyond traditional measures of debt and its relation to GDP. By taking into account not only debt but also the assets backing that debt, this approach can throw a spotlight on potential risk exposures.

We acknowledge the gaps in this work. By taking a global and cross-sector view, we have not analyzed in depth the challenges in specific sectors, such as the potential to optimize the value of public assets on government balance sheets, for example by redeveloping or redeploying public land for higher-value use or improving operational public assets.<sup>3</sup> We also have not assessed the precise exposure of the financial balance sheet to risk scenarios. We note changes in ratios like asset valuations and loan-to-value measures but do not address in depth underlying theories of why, for instance, asset prices have diverged from GDP growth. By taking a private market value perspective, we do not look at depletion of natural capital or development of human capital. We made several extrapolations and interpolations to obtain solid data for the ten economies; more granular views would be possible for a larger set of countries if harmonized balance sheet data were a priority for more economies.

For full details of our balance sheet accounting of the global economy, including valuation and depreciation methods and a list of our data sources, see chapter 1 and the technical appendix.

<sup>1</sup> The System of National Accounts (SNA) is the internationally coordinated standard set of recommendations on how to compile measures of economic activity. Its origins date back to 1947, when the issue was taken up by United Nations Statistical Committee, leading to the 1953 publication of the first SNA. It has subsequently been revised five times, in 1960, 1964, 1968, 1993, and 2008. See Historical versions of the System of National Accounts, United Nations Statistics Division, [unstats.un.org](https://unstats.un.org).

<sup>2</sup> Dag Detter and Stefan Fölster, "Unlocking public wealth," *IMF Finance & Development*, March 2018.

<sup>3</sup> Dag Detter, *Exploring the unknown: How asset maps can transform public financial management*, IMF Public Financial Management Blog, August 30, 2021.

## Assets on the global balance sheet are split almost equally between real assets, financial assets outside the financial sector, and those within it

To construct a global balance sheet, we add up all real assets in the economy, as well as all financial assets across all sectors (including, notably, the financial sector), analogous to the way a corporation builds its balance sheet. In 2020, the combined balance sheet of the ten focus countries totaled about 18.1 times their GDP in financial and real assets. Scaled up to the global economy as a whole, that total amounted to \$1,540 trillion (Exhibit E1).

At a functional level, three balance sheets of (coincidentally) about \$500 trillion each interlock: the real economy balance sheet; the financial balance sheet; and the financial sector balance sheet.

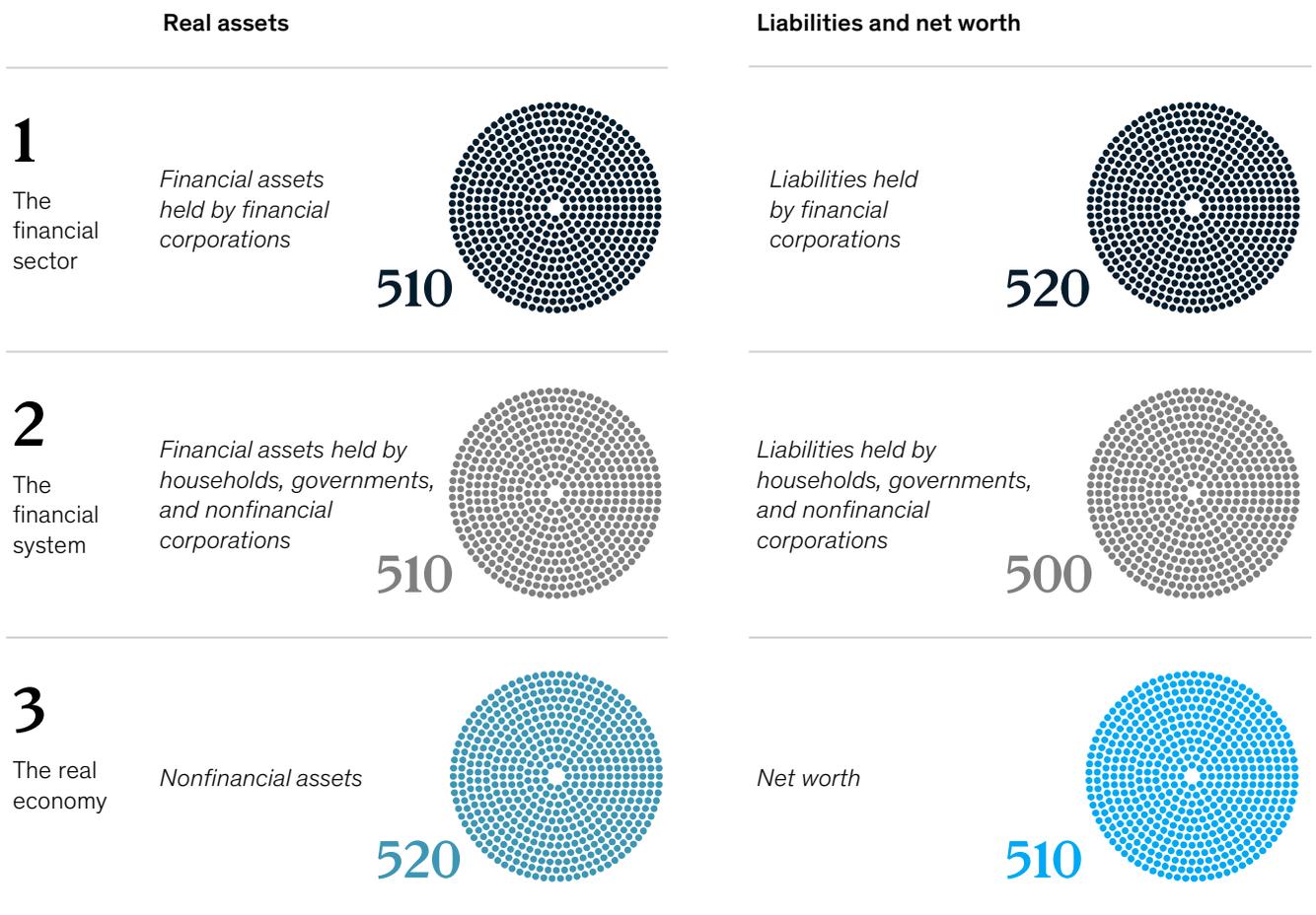
The real economy balance sheet has \$520 trillion in real assets, such as machinery and equipment, infrastructure, buildings, natural resources, and intellectual property, or IP. These are mirrored on the liability side as net worth.

Exhibit E1

### Each of the three components of the global balance sheet amounted to about \$500 trillion in 2020, or six times GDP.

Size of balance sheet  
\$ trillion

85  Global GDP



Note: The global average is an extrapolation derived from a weighted average of ten countries based on GDP.  
Source: CEIC; Federal Reserve Board; national statistics offices; OECD; World Bank; McKinsey Global Institute analysis

The financial balance sheet of households, corporations, and governments has \$510 trillion in financial assets like stocks, bonds, pension funds, and cash and deposits that facilitate ownership and risk transfer of real assets as well as time shifting of savings and consumption. These financial assets are mirrored on the balance sheet by \$500 trillion in liabilities, since they represent eventual claims against those same sectors. The financial balance sheet is coincidentally almost the same size as the real economy one, although historically it has been much smaller.

Finally, financial institutions create and intermediate those financial assets and liabilities—with transformation of risks, maturity, and size—and hold \$510 trillion in financial assets and corresponding liabilities of \$520 trillion. Exhibit E2 shows how these three balance sheets interlock. Each of three amounts to about six times GDP. While each equalizes within itself at a closed economy level, in our analysis of ten countries, there is a small negative net financial position, meaning that these countries collectively borrow from the rest of the world and so assets and liabilities do not match precisely.

**At the global level, real assets constitute net worth and make up 6.1 times GDP, while aggregate financial assets net out**

In this report, we assess assets and liabilities, gross and net, at the line-item level, across sectors, across countries, and, finally, from a global perspective. A key concept for this research is that of net worth as a mirror image of real assets at the global level. Net worth is the store of value that defines wealth and is available to support the generation of future income. For households, net worth includes both real assets such as property and financial assets including stocks and bonds.

## 6.1x GDP

Total size of real assets and net worth

At the global or closed economy level, however, financial assets are matched by corresponding liabilities, such as the bonds owned by households that are a liability of a government, or equity that is a liability for the issuing corporation. Hence, while the gross volume of financial assets is now nearly equivalent to the value of real assets, on a net basis, after subtracting corresponding financial liabilities, the net aggregate value is zero. Net worth is what is left after financial assets and liabilities net each other out and thus is equivalent to the value of real assets.<sup>2</sup> Therefore, while financial assets represent wealth to sectors, institutions, and households, and fulfill many functions like ownership and risk transfer of real assets, on the consolidated global balance sheet, financial assets do not add to net worth, nor do financial liabilities subtract from it.

At a national level, countries can, however, have positive or negative net financial assets or liabilities contributing to net worth. These represent lending or borrowing positions in relation to the rest of the world; in our sample countries, such positions account for a maximum of 13 percent of total country net worth.<sup>3</sup>

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<sup>2</sup> See James Tobin, *Asset accumulation and economic activity: Reflections on contemporary macroeconomic theory*, University of Chicago Press, 1980.

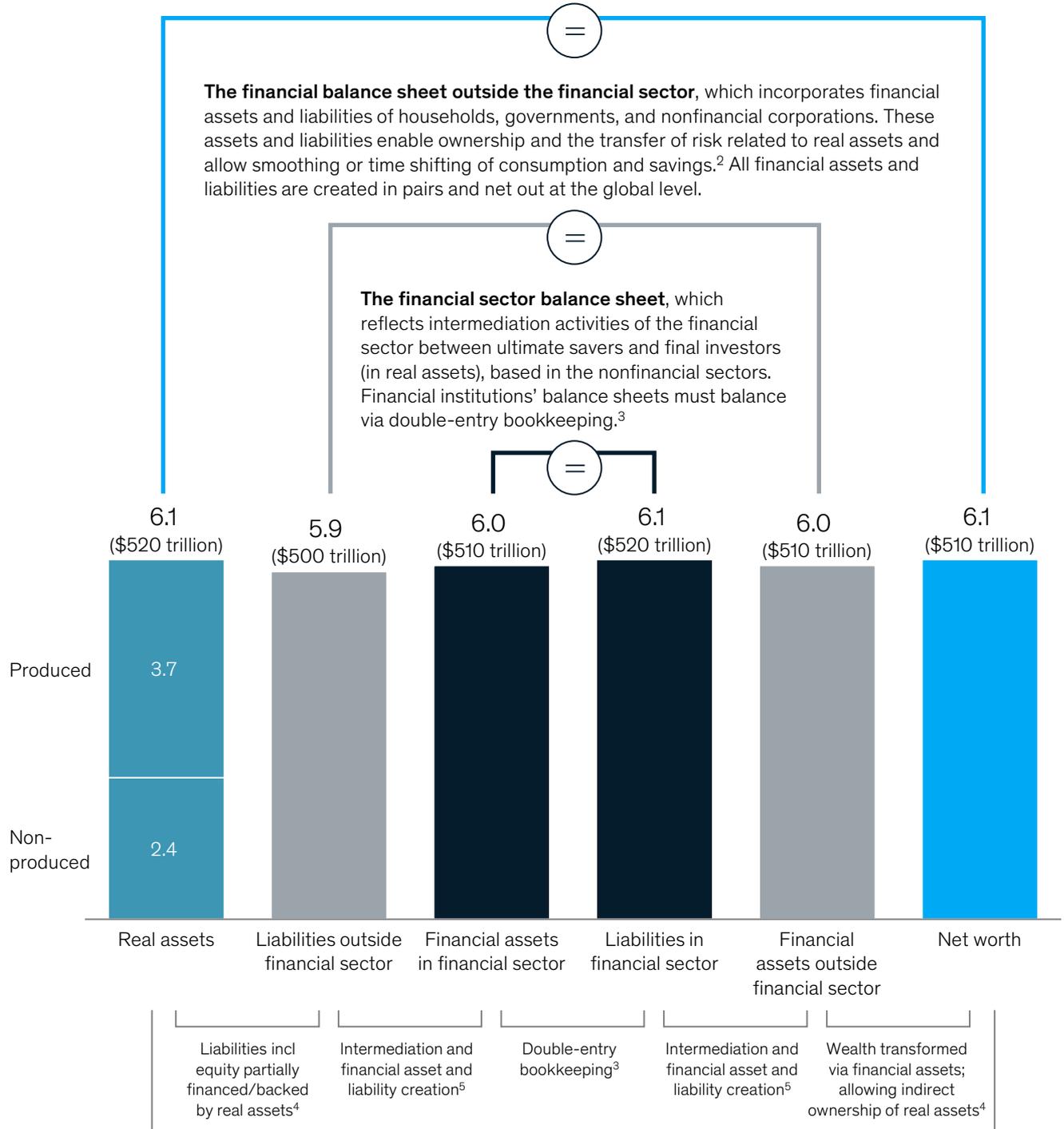
<sup>3</sup> In our sample of ten countries, the collective net financial position is less than 0.1 times GDP, a slight negative. For this reason, real assets do not exactly match net worth.

# The global balance sheet can be interpreted as three interlocking balance sheets of about \$500 trillion each.

Balance sheet components, 2020, GDP multiple

Simplified

**The real economy balance sheet**, where savers and investors accumulate real assets and thus wealth. In a world without finance, real assets and wealth are identical—for example, someone accumulates wealth by building a house.<sup>1</sup>



Wealth ultimately transformed into real assets (directly or via corporate equity ownership); real assets serve as store of wealth<sup>5</sup>

1. Globally, assets equal liabilities (and net worth) within each of the three levels shown; small deviations are due to the collective rest-of-world position across the ten countries in our sample.  
 2. Consumption smoothing refers to saving and borrowing to maintain an even level of consumption over time.  
 3. Financial sector double-entry bookkeeping includes real assets; for that reason, as well as due to asymmetric valuation changes on assets and liabilities, liabilities are not perfectly equal to financial assets.  
 4. Not all real assets have a financial liability against them (eg, house without a mortgage), and not all liabilities are asset backed (eg, student loans). Historically, liabilities have been much smaller than real assets.  
 5. Not all financial flows are intermediated by the financial sector (eg, direct equity ownership), and there are financial assets and liabilities only within the financial sector.  
 Note: The global average is an extrapolation derived from a weighted average of ten countries based on GDP. Figures may not sum to 100% because of rounding.  
 Source: CEIC; Federal Reserve Board; national statistics offices; OECD; World Bank; McKinsey Global Institute analysis

## The world has never been wealthier, with large variations across countries and households

Since 2000, the global balance sheet and net worth have tripled in size. Net worth grew from \$160 trillion in 2000 to \$510 trillion in 2020. Net worth averaged \$66,000 per capita globally in 2020, albeit with large variations across economies, and even larger differences between households within an economy. In the countries in our sample, per capita net worth ranged from \$46,000 in Mexico to \$351,000 in Australia.<sup>4</sup> This raises questions about how to build wealth for more households and what drives country differences in the market value of net worth.

To normalize net worth for differences in income levels across countries—and also because net worth is a claim on future output—we also look at net worth as a multiple of GDP. It ranged from 4.3 times in the United States to 8.2 times in China (Exhibit E3).

# \$66,000

Average per capita net worth across the ten countries in our sample

A variety of factors shape the level of net worth relative to GDP across countries. They include resource endowments, trade balances, investment rates, as well as price levels of assets in comparison with consumer baskets. Australia, Canada, and Mexico have considerable natural resources of 0.3 to 0.5 times GDP. Manufacturing exporters Germany and Japan, as well as resource exporter Canada, hold significant net financial assets and have a net lending position to the rest of the world, as a result of current account surpluses. China and Japan have some of the highest net-worth-to-GDP ratios and historically heavy investment in stocks of public and corporate non-real estate assets that are nearly twice as high as in other economies in our sample, except for Mexico.

Relative price levels, particularly in real estate, also play a role. In Australia, China, and France, the value of residential land and buildings relative to GDP is 18 to 44 percent above our sample average, even as residential living space per capita is broadly in line with our sample average.<sup>5</sup> Net worth in the United States was the lowest relative to GDP among the ten countries. This reflects the significant US net foreign debt (among other net liabilities) as well as the country's comparatively low household and corporate real estate wealth relative to income—even though it has the highest per capita floor space in our sample, in part because its land market is vast and more elastic than in other countries.<sup>6</sup> (Note that household net worth in the United States is higher than average among our sample countries relative to GDP and more than one-third higher than national net worth, as households there have large equity and debt claims against the corporate and public sector which are not backed by real assets or total economy net worth. Put differently, US households have large asset holdings that eventually can be regarded as claims against themselves in their role as taxpayers and consumers.)

Across the ten countries in our sample, China accounted for 50 percent of the growth in net worth, or wealth, over that period, followed by the United States, at 22 percent. Japan, which held 31 percent of wealth across the ten economies in 2000, held just 11 percent of the total in 2020.

Within the household sectors of China and the United States, two-thirds of wealth is owned by the top 10 percent of households.<sup>7</sup> In the United States, the amount of the country's wealth held by the top 10 percent of households grew from 67 percent in 2000 to 71 percent in 2019, while the share of the bottom 50 percent of wealth owners dropped from 1.8 percent in 2000 to 1.5 percent in 2019. In China, these shifts were more extreme: the top 10 percent of households owned 48 percent of the nation's wealth in 2000, and by 2015, those households owned 67 percent. The bottom 50 percent of Chinese households owned 14 percent of the wealth in 2000 and 6 percent in 2015.<sup>8</sup>

<sup>4</sup> These figures are based on nominal conversions to US dollars. At purchasing power parity, Mexico's per capita net worth is \$104,000 and Australia's is \$356,000.

<sup>5</sup> Data on residential living space sourced from Rogoff and Yang include 8 of the 10 countries. This sample average excludes Japan and Sweden. See Kenneth Rogoff and Yuanchen Yang, "Has China's housing production peaked?," *China and the World Economy*, Volume 29, Issue 1, 2021.

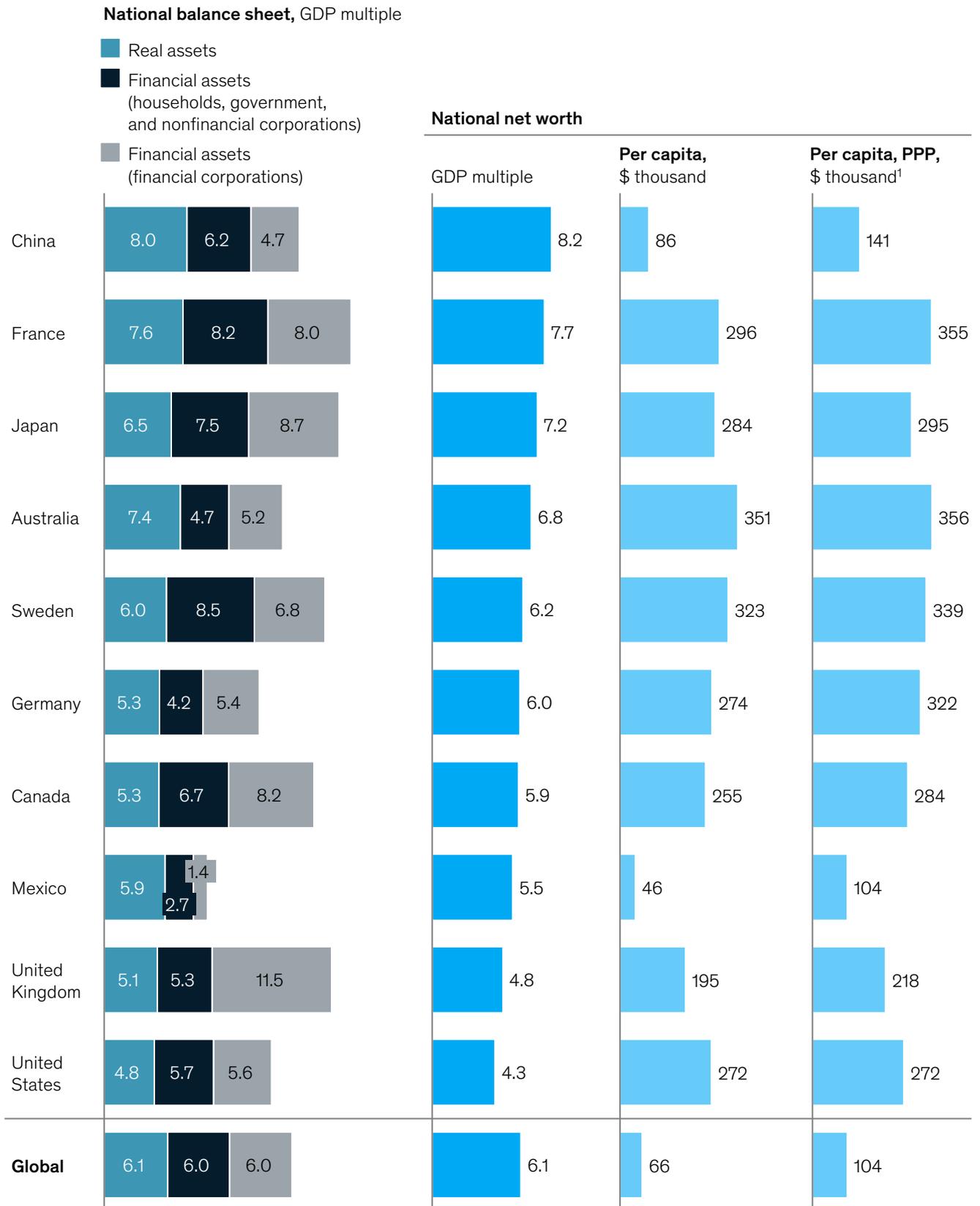
<sup>6</sup> See Aida Caldera Sanchez and Asa Johansson, "The price responsiveness of housing supply in OECD countries," *Journal of Housing Economics*, May 2013, Volume 2, Issue 3.

<sup>7</sup> We focus on China and the United States for reasons of data availability. The World Inequality Database, [wid.world](http://wid.world). See also *Inequality: A persisting challenge and its implications*, McKinsey Global Institute, June 2019; and Thomas Piketty, *Capital in the Twenty-First Century*, The Belknap Press of Harvard University Press, 2017.

<sup>8</sup> The World Inequality Database, [wid.world](http://wid.world).

## Total balance sheets and net worth vary widely by country.

National balance sheets and net worth at market prices, 2020



1. Purchasing power parity. Rates from World Bank; sample average redistributes GDP weights based on PPP GDP; global (extrapolated) view takes into account world PPP GDP multiplied by the net worth/GDP ratio of 6.1.

Note: The global average is an extrapolation derived from a weighted average of ten countries based on GDP. Figures may not sum to 100% because of rounding.

Source: CEIC; Federal Reserve Board; national statistics offices; OECD; World Bank; McKinsey Global Institute analysis

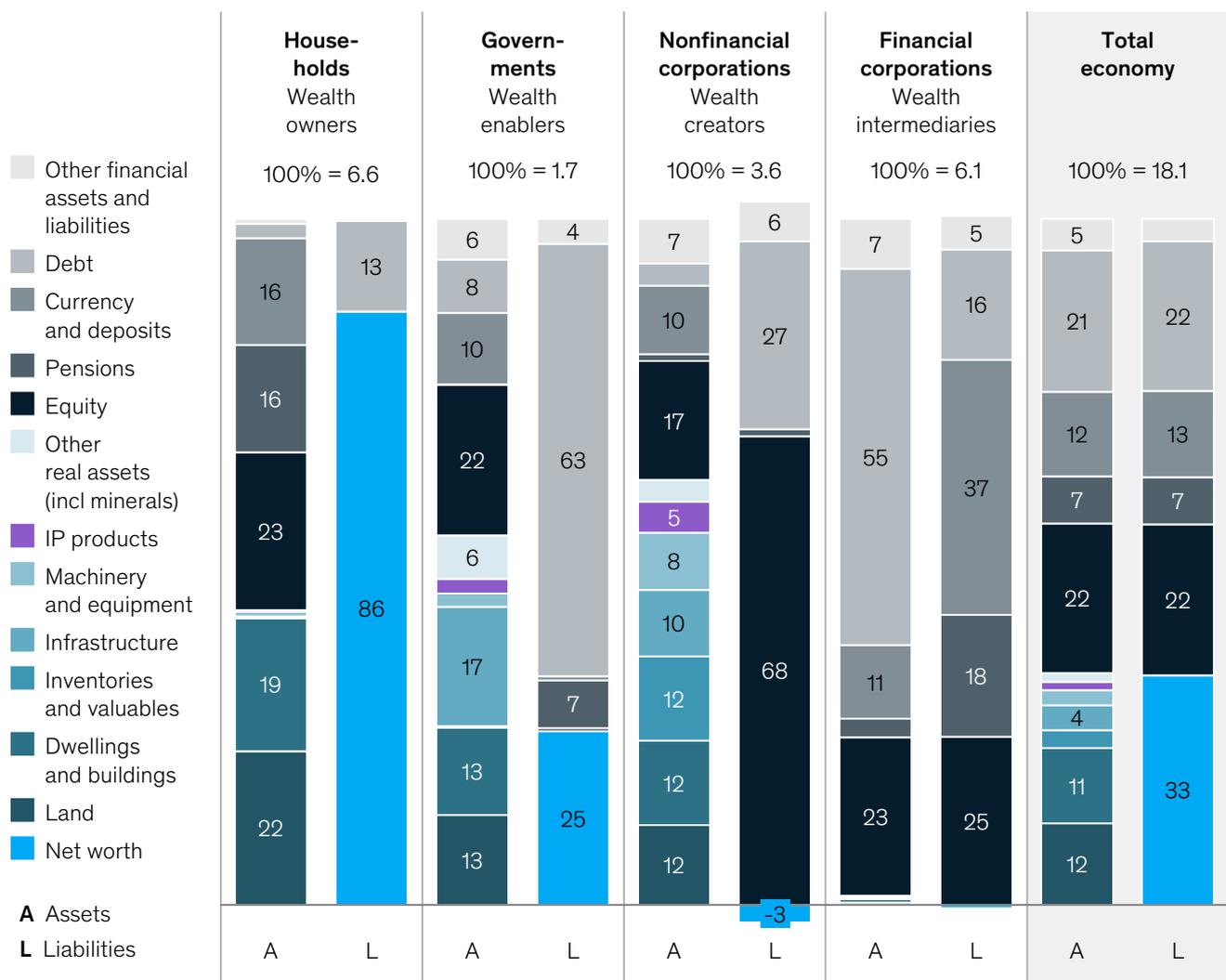
## Asset, liability, and net worth profiles vary across economic sectors, with households owning about 95 percent of wealth

Households can be regarded as the final owners of wealth. For households, real assets—mostly housing—make up almost half of net worth. Net financial assets, in roughly equal parts pension assets, deposits, and equity, make up the other half (Exhibits E4 and E5). Distribution of household assets, however, varies between countries. For instance, assets held by households in Australia, France, Germany, and Mexico are primarily buildings and land, while in the United States, equity and pensions make up most of household wealth. Among other factors, this reflects differences in countries' pension systems, for instance pay-as-you-go arrangements versus those where assets are accumulated to meet pension obligations. In Japan, deposits make up more than one-third of total household assets. Via those financial assets and real estate holdings, households in the ten countries control 95 percent of net worth, ranging from 64 percent of national net worth in Mexico to 135 percent in the United States.

Exhibit E4

### The distribution of assets and liabilities varies by sector.

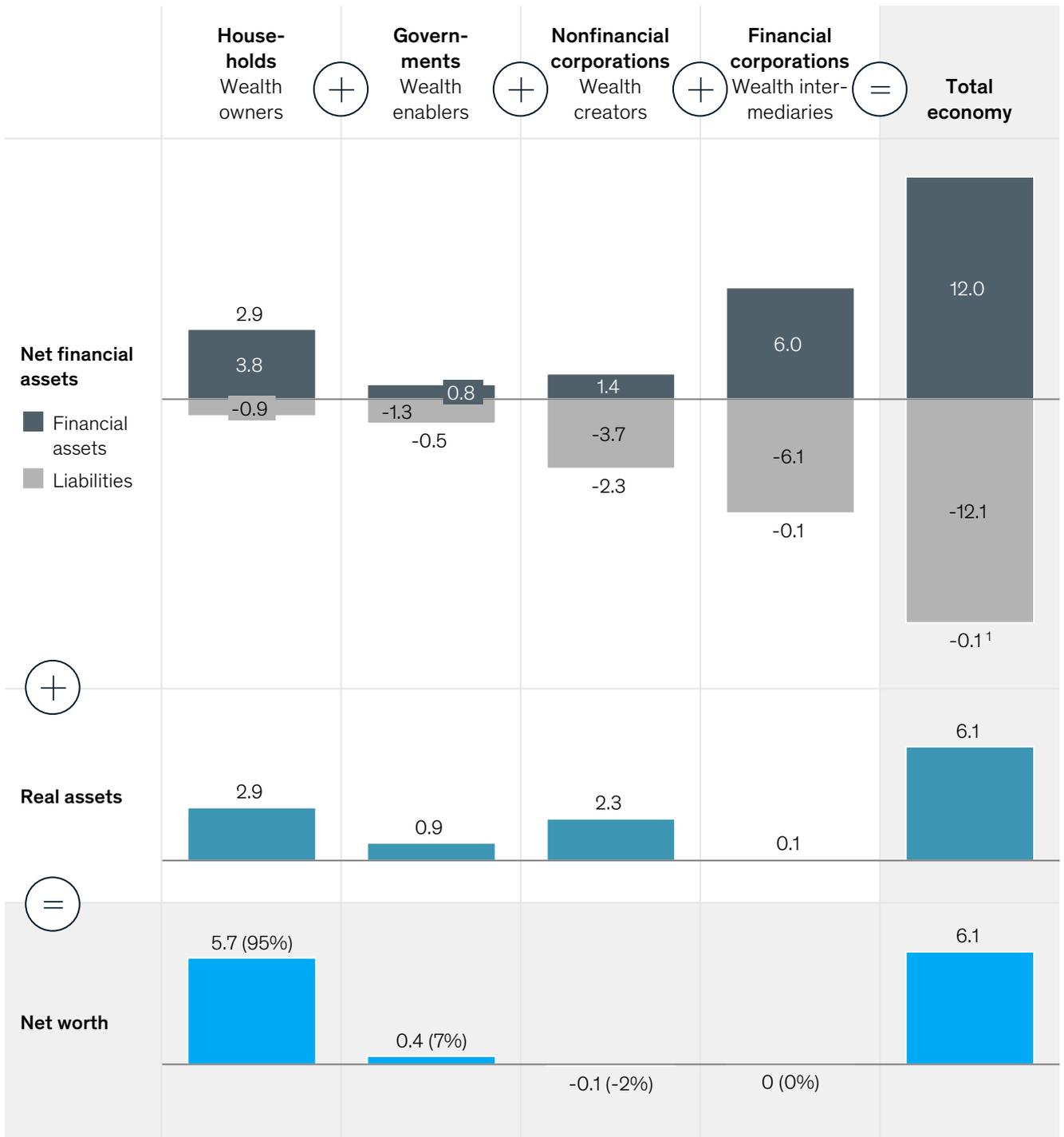
Global balance sheet by sector, 2020, %, GDP multiple



Note: The global average is an extrapolation derived from a weighted average of ten countries based on GDP. Figures may not sum to 100% because of rounding.  
Source: CEIC; Federal Reserve Board; national statistics offices; OECD; World Bank; McKinsey Global Institute analysis

**Real assets constitute net worth at the total economy level, while financial assets work to pass net worth on to households.**

Wealth breakdown by sector, 2020, GDP multiple



The top row shows that total net financial assets net out at a global level, leaving real assets equivalent to net worth (middle row). In the corporate sector, real assets are offset by net financial assets.

Bottom row: Net worth is mostly held by households—half in the form of financial claims on corporates and governments, the other half in real estate.

1. At the global level, net financial assets are equal to zero. The -0.1 times GDP figure here represents the collective rest-of-world position across the ten countries in our sample.

Note: The global average is an extrapolation derived from a weighted average of ten countries based on GDP. Figures may not sum to 100% because of rounding. Source: CEIC; Federal Reserve Board; national statistics offices; OECD; World Bank; McKinsey Global Institute analysis

The public sector, often seen as an enabler of wealth, owns mostly public buildings, infrastructure, land, and natural resources, which are worth about 90 percent of GDP, as well as financial assets such as stakes in state-owned enterprises. On the liability side, public debt in many countries exceeds the value of public assets. Public net worth was sizable, particularly in China, at 1.8 times GDP (due to sizable land ownership and high investment in state-owned firms), Australia (due to natural resource endowments), and Sweden (which had relatively low levels of public debt and a broad portfolio of financial and nonfinancial public assets). By contrast, the UK and US governments are net borrowers that have not built public wealth commensurate with debt.

Nonfinancial corporations, the creators of wealth, own productive assets like machinery, factories, and intangibles to the tune of 0.8 times GDP, and inventories amounting to about 0.4 times GDP. They also have significant real estate holdings, such as hotels, restaurants, and office buildings. They pass this wealth on to households via debt and equity. This sector includes state-owned enterprises if they generate substantial revenue.<sup>9</sup> (State-owned enterprises that have little or no revenue are included in the government sector.) Real assets in the corporate sector range from 1.3 times GDP in the United States to 3.8 times GDP in China.

Financial corporations, the intermediators of wealth, mirror the assets and liabilities in other sectors. They hold financial assets such as mortgages, public and corporate bonds, and equities. At the same time, they owe deposits, bonds, and pension assets, mostly to households.<sup>10</sup> The financial sector includes central banks and their expanding balance sheets.

## **Real estate makes up two-thirds of global real assets or net worth, raising questions about capital and wealth allocation**

The value of residential real estate including land amounted to almost half of global net worth in 2020, with corporate and government buildings and the land associated with them accounting for an additional 20 percent. Other fixed assets like infrastructure, industrial structures, machinery and equipment, and intangibles—the types of assets that typically drive economic growth—make up only one-fifth of real assets or net worth (Exhibit E6). They range from just 15 percent of net worth in France and the United Kingdom to 39 percent in Japan. This raises questions about the way societies allocate and build capital and wealth and, at a time of rapid economic change linked to technological advances, whether we have managed to find a 21st-century store of wealth that could be as durable as bricks and mortar. For now, despite the rapid adoption of digitization, that does not appear to be the case.

Intangible assets are a prime example. In this research, intangible assets refer to intellectual property like R&D and software, and they play an increasingly important role in today's economy.<sup>11</sup> The OECD reported in 2015 that intangible assets had expected returns of 24 percent, the highest rate among produced asset categories.<sup>12</sup>

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<sup>9</sup> The 2008 System of National Accounts classifies state-owned enterprises with prices at least 50 percent of costs as corporations.

<sup>10</sup> For further understanding of the foundations of our research, see *System of National Accounts 2008*, European Commission, International Monetary Fund (IMF), Organisation for Economic Co-operation and Development (OECD), United Nations, and World Bank, 2008, and Francois Lequiller and Derek Blades, *Understanding national accounts*, second edition, OECD, 2014.

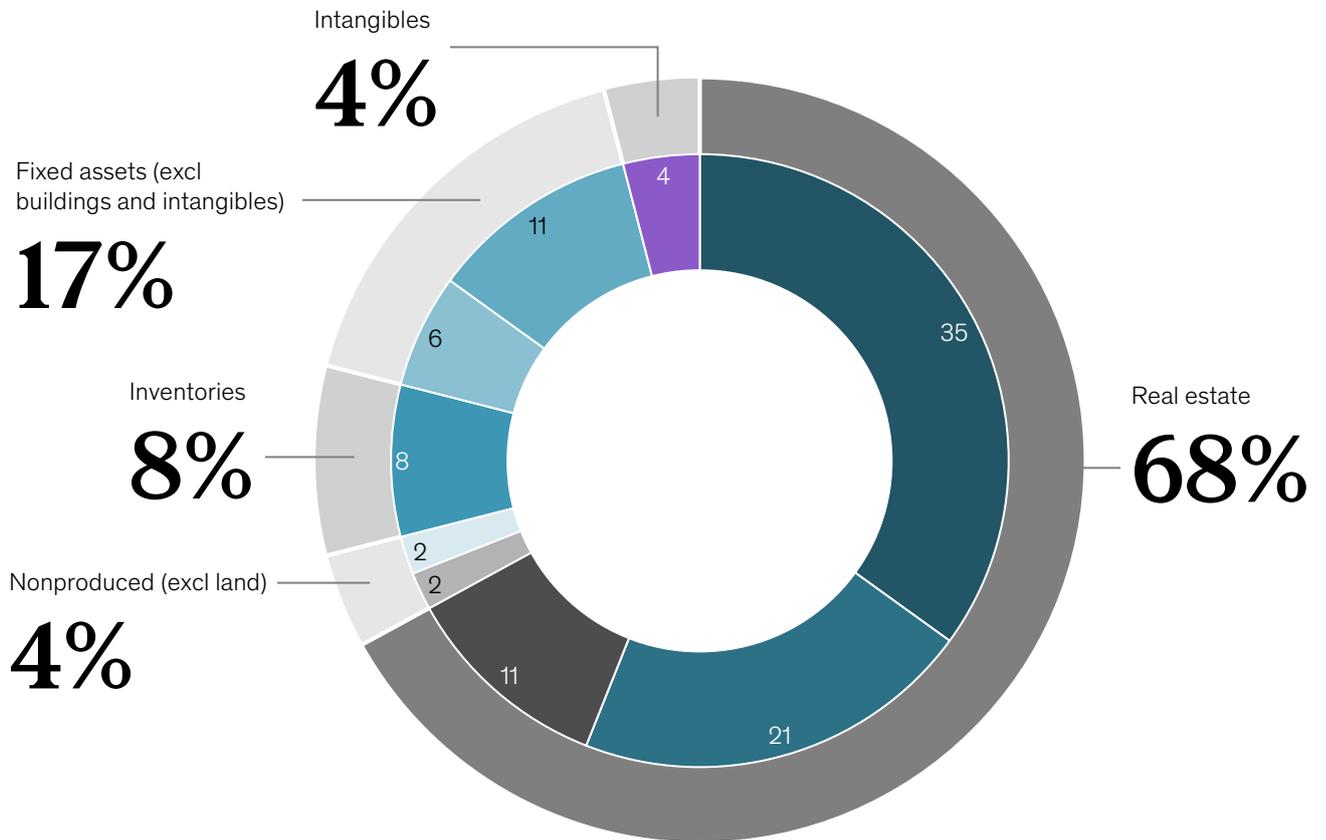
<sup>11</sup> Broadly defined, investment in intangibles has come to outstrip tangible investment in a number of geographies; see Jonathan Haskel and Stian Westlake, *Capitalism without capital: The rise of the intangible economy*, Princeton University Press, 2017; Carol Corrado et al., *Intangible investment in the US and EU before and since the Great Recession and its contribution to productivity growth*, European Investment Bank, 2017; and Carol Corrado et al., "Innovation and intangible investment in Europe, Japan, and the United States," *Oxford Review of Economic Policy*, Summer 2013, Volume 29, Number 2.

<sup>12</sup> *The impact of R&D investment on economic performance: A review of the econometric evidence*, OECD, April 2015. Additional research suggests that these high returns may not persist over time. The authors note that idea production, or the creation of intangible assets through research and development, faces diminishing returns over time across industries. See also Nicholas Bloom et al., "Are ideas getting harder to find?," *American Economic Review*, April 2020, Volume 110, Number 4.

### Real estate accounts for two-thirds of real assets.

Distribution of real assets, global average, 2020, %

- Land
- Mineral and energy reserves
- Machinery and equipment
- Dwellings
- Other nonproduced assets
- Infrastructure
- Nonresidential buildings
- Inventories
- IP products



Note: The global average is an extrapolation derived from a weighted average of ten countries based on GDP. Labels for values <1 not shown. Figures may not sum to 100% because of rounding.

Source: AMECO; CEIC; EU KLEMS; Federal Reserve Board; national statistics offices; OECD; World Bank; McKinsey Global Institute analysis

Nonetheless, intangibles represent only 4 percent of total net worth and have thus not served as a significant store of value, at least not as currently measured. The reason is that for their mostly corporate owners, the value of intangible assets is assumed to decline rapidly due to obsolescence and competition, even if their value to society may have a much longer shelf life (see Box E2, “Measuring intangibles”). The market value of equities in many (but not all) countries has not materially diverged from underlying asset values as recorded under customary accounting standards, which suggests this assumption is broadly in line with markets.

## Measuring intangibles

Intangible assets are difficult to measure. To assess their value on national balance sheets for this research, we varied two parameters.

First, we expanded the definition of intangibles beyond intellectual property by including organizational capital, training, and brand investments. This increased global net worth relative to GDP by 4 percent. While this would roughly double the value of intangibles on the balance sheet, their value would nonetheless remain small compared to their tangible counterparts.<sup>1</sup>

Second, we adjusted assumptions on the lifespan of intangibles, which

has a much larger impact. Current accounting standards assume relatively high amortization rates of more than 20 percent annually, or a commercially exploitable life of less than five years.

This would be in line with relatively rapid loss of value to competition or obsolescence.

From a societal point of view, however, it could be argued that intangibles, like know-how, live nearly forever.

The invention of the wheel in the fourth millennium BC, for instance, is still relevant to e-bike manufacturers today. Removing any depreciation or amortization from the measurement

of intangibles over the past 20 years would increase global net worth by 11 percent and nearly quadruple their value. In the United States, this approach would add about 0.8 times GDP to corporate assets and thus go a long way toward explaining the difference in corporate equity liabilities relative to underlying net asset values of one times GDP in 2020. While we tested this sensitivity, in this research we stick to the commercially exploitable value of intangibles as a store of value on a balance sheet, to conform with their treatment in national accounts as well as with market valuations in other countries.

<sup>1</sup> See Ryan H. Peters and Lucian A. Taylor, "Intangible capital and the investment-q relation," *Journal of Financial Economics*, February 2016.

Among the ten sample countries, companies and markets in Canada and the United States may seem to value intangibles more favorably than those in the other countries, however. As market-to-book ratios soared, the value of corporate equity in the United States exceeded the value of underlying net assets by one times GDP in 2020. This may reflect a higher value of intangibles, but it could also relate to the market and competition environment or be in part a result of so-called superstar effects among the top 10 percent of companies in economic profits.<sup>13</sup>

## Wealth has grown out of proportion with income due to asset price inflation, marking a departure from historical trends

Before 2000, net worth growth largely tracked GDP growth at the global level. There were individual country differences and exceptions from this pattern, typically reverting to the historical mean over time. These countries and periods include the United States in the late 1970s and early 1980s, when construction costs greatly exceeded general inflation; Japan during the asset bubble of the late 1980s that was followed by the "lost decade"; Sweden in the real estate bubble followed by a banking crisis in the early 1990s; and the United States during the real estate price rise before the 2008 financial crisis (Exhibit E7).<sup>14</sup>

In about 2000, however, net worth at market value began growing significantly faster than GDP in almost all of our sample countries, even as real investment continued moving in tandem with GDP. This coincides with a period during which interest rates and rates of return on real estate declined to historical lows.<sup>15</sup>

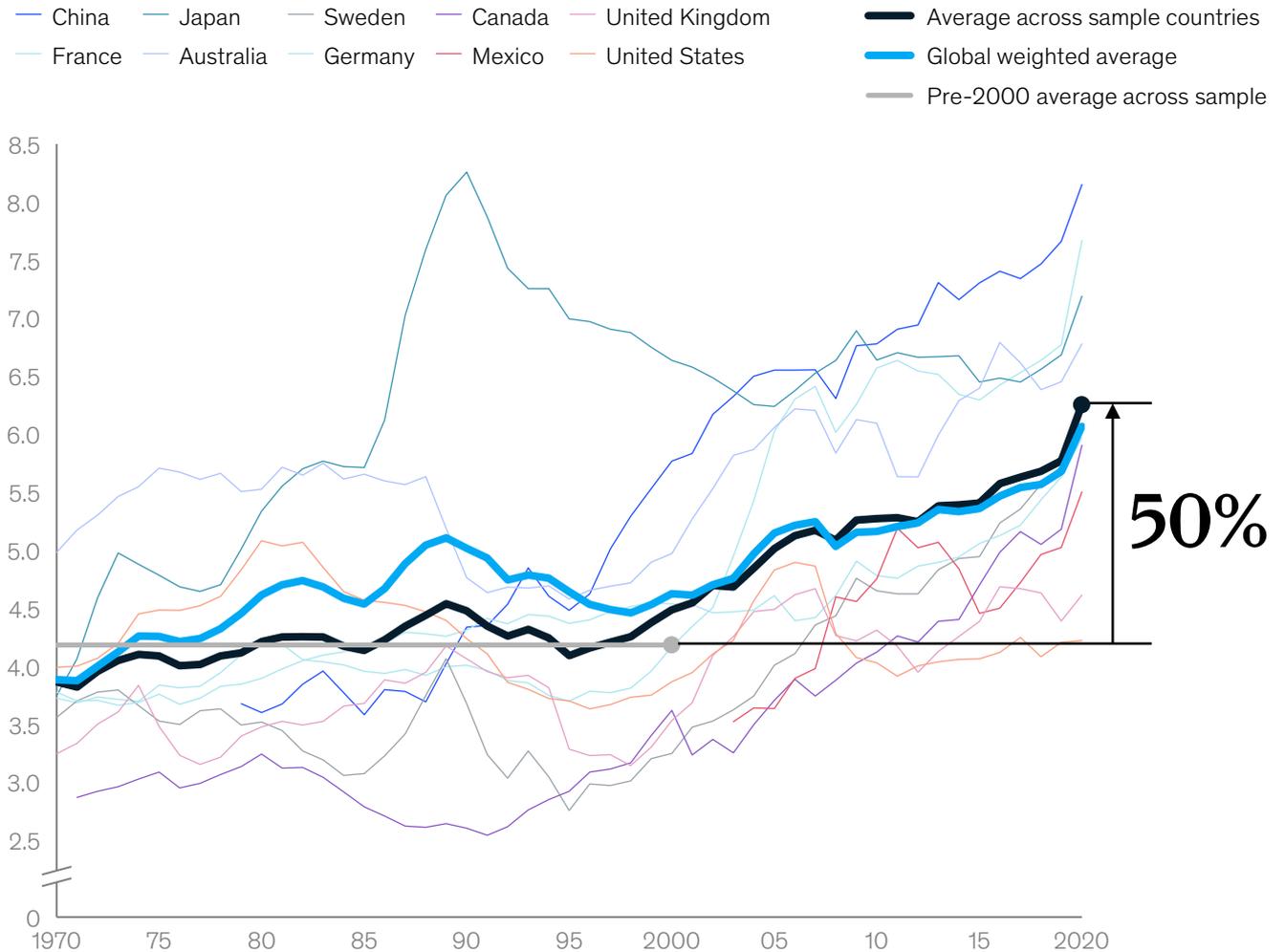
<sup>13</sup> We define superstar companies as global firms in the top 10 percent of companies in economic profit. *Superstars: The dynamics of firms, sectors, and cities leading the global economy*, McKinsey Global Institute, October 2018, McKinsey.com. For an analysis of the competitive environment, see Thomas Philippon, *The great reversal: How America gave up on free markets*, Harvard University Press, 2019.

<sup>14</sup> See Robert Shiller, *Irrational exuberance*, third edition, Princeton University Press, 2015.

<sup>15</sup> See Thomas Laubach and John C. Williams, "Measuring the natural rate of interest," *The Review of Economics and Statistics*, November 2003, Volume 85, Number 4; Kathryn Holston, Thomas Laubach, and John C. Williams, *Measuring the natural rate of interest: International trends and determinants*, Federal Reserve Bank of San Francisco, working paper number 2016-11, December 2016; Robert E. Hall, "Low interest rates: Causes and consequences," *International Journal of Central Banking*, September 2017; Mauricio Ulate, *Going negative at the zero lower bound: The effects of negative nominal interest rates*, Federal Reserve Bank of San Francisco, working paper number 2019-21, September 2019; and Lukasz Rachel and Lawrence H. Summers, *Secular stagnation and the decline in real interest rates*, National Bureau of Economic Research, working paper number 26189, November 2019.

**Since 2000, net worth at market prices has increased relative to nominal GDP in most countries.**

**Net worth at market prices relative to nominal GDP, 1970–2020**



Note: The global average is an extrapolation derived from a weighted average of ten countries based on GDP. Labels for values <1 not shown. Figures may not sum to 100% because of rounding.  
 Source: CEIC; Federal Reserve Board; national statistics offices; OECD; World Inequality Database; World Bank; McKinsey Global Institute analysis

Compared to GDP, net worth between 2000 and 2020 was 104 percentage points higher on average than between 1970 and 1999, albeit with considerable variation across the ten countries. The largest increase in net worth relative to GDP in 2000 to 2020 was in France, a full 371 percentage points, as real estate prices soared, particularly in the early 2000s.<sup>16</sup> Sweden’s net worth grew by 301 percentage points relative to GDP from 2000 to 2020, reflecting higher valuations on residential and corporate real estate, while China’s grew by 262 percentage points, due mostly to growth in produced assets controlled by nonfinancial corporations.

Net worth growth relative to GDP was somewhat more muted in the United States. An increase of 94 percentage points in the value of real assets relative to GDP from 2000 to 2020 was partially masked by net foreign liabilities (that is, foreign debt and other obligations that exceed ownership of foreign assets), which increased by 41 percentage points over that period. Also, the continuing impact of the 2008 financial crisis slowed the growth of home

<sup>16</sup> One hundred percentage points is equal to a change in GDP multiple of 1. The percentage point figures in this report consider the change inclusive of the first year in the listed range. Given end-of-year reporting of stocks, the percentage point figures for 2000–20 take the difference between GDP multiples of 2020 and 1999.

prices in the United States compared to most other countries in our sample. Savers, including companies, put their money into financial assets instead: in the period 2000 to 2020, the average value of nonfinancial corporate equity liabilities relative to GDP and to underlying net corporate assets was almost double the value of the average from 1950 to 1999.

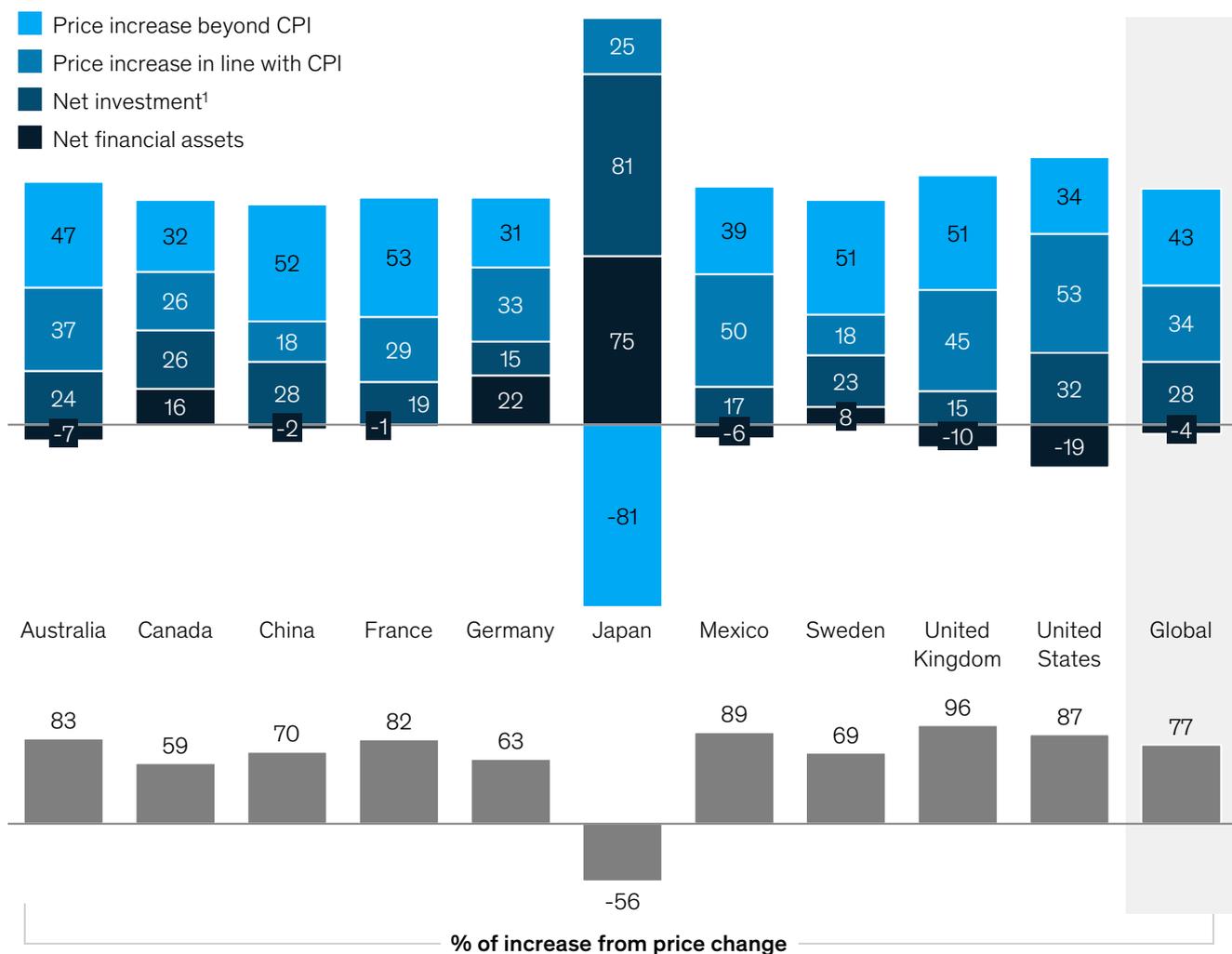
**Higher asset prices accounted for about three-quarters of the growth in net worth between 2000 and 2020, while saving and investment made up only 28 percent**

Net worth is a claim on future income, and historically, growth in net worth largely reflected investments of the sort that drive productivity and growth, plus general inflation. Net worth is increasingly driven by price growth beyond inflation, while net investment contributed only 28 percent to net worth expansion (Exhibit E8). Asset price increases thus made up 77 percent of net worth growth (negative net financial assets made up 4 percent), and more than half of those price effects were in excess of general inflation.

Exhibit E8

**Price changes across countries account for 77 percent of net worth growth from 2000 to 2020.**

% of net worth growth derived from price increases, net investment, and net financial assets, 2000–20



1. Net investment is calculated as the sum of nominal investment less depreciation from 2001 to 2020 (without adjusting for price effects). Note: The global average is an extrapolation derived from a weighted average of ten countries based on GDP. Mexico data start in 2003. Source: CEIC; Federal Reserve Board; national statistics offices; IHS Markit; OECD; World Bank; McKinsey Global Institute analysis

## Real asset valuations have grown over the past two decades as interest rates have fallen and operating returns have stagnated or declined

Real assets are critical to the global economy. Returns on those assets account for about one-quarter of GDP directly. Growth in real assets also complements labor in driving productivity, which in turn drives economic growth. As expected, our analysis shows a positive relationship between an increase in produced assets and capital returns on a per capita basis, as well as between produced assets per capita and labor productivity. Widely discussed differences in labor share of income across our sample countries also largely reflect differences in the value and portfolio mix of assets in each country.<sup>17</sup>

As asset valuations soared, valuation gains over and above inflation outstripped operating returns in several economies over certain time periods, creating a rationale for investors to prioritize the potential for asset price increases over real economic investment and improvement of operating assets (Exhibit E9).

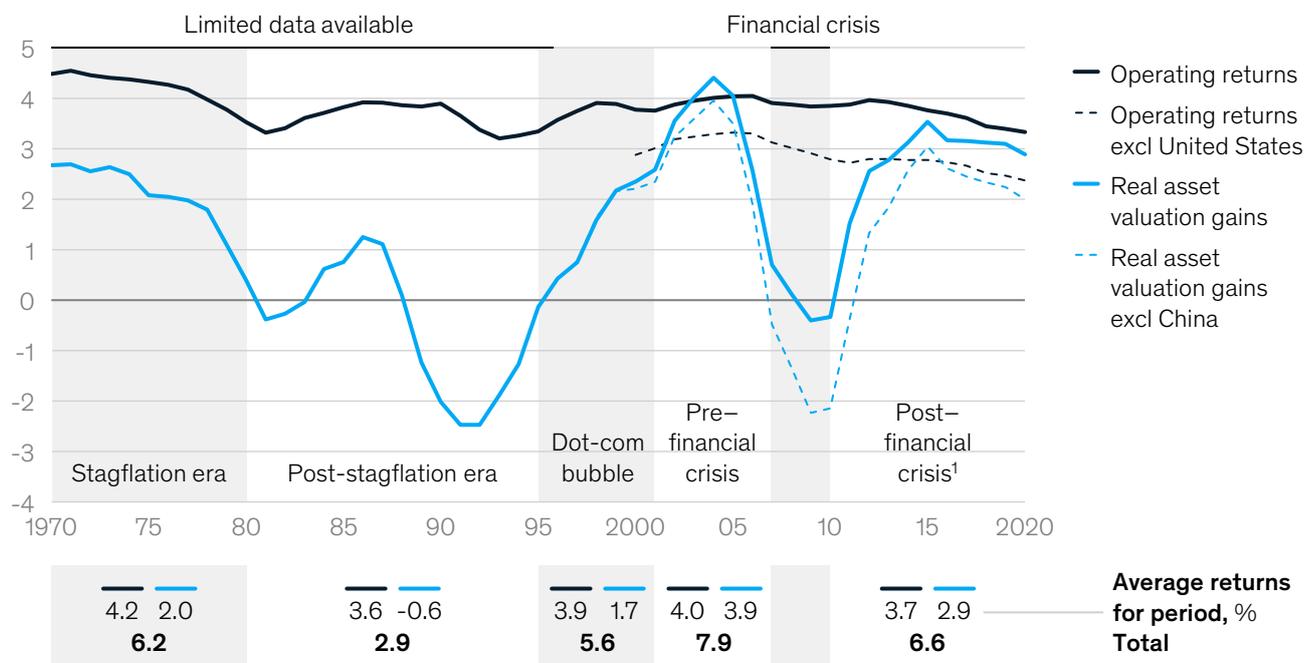
As part of this broader trend, the value of corporate assets and equity has diverged from GDP and from corporate profits over the past decade. Since 2011, total corporate real assets grew as a weighted average by 61 percentage points relative to GDP across the ten countries. Corporate liabilities increased even more. Liabilities linked to equity grew by 105 percentage points while debt liabilities grew by 27 percentage points. The corporate profits underpinning those values declined by one percentage point relative to GDP at the global level. This divergence points to declining capital productivity and returns.

<sup>17</sup> See also *A new look at the declining labor share of income in the United States*, McKinsey Global Institute, May 2019; "Understanding the downward trend in labor income shares," in *World Economic Outlook: Gaining Momentum?*, IMF, April 2017; and Loukas Karabarbounis and Brent Neiman, "The global decline of the labor share," *The Quarterly Journal of Economics*, February 2014, Volume 129, Issue 1.

Exhibit E9

### After 2000, valuation gains approached operating returns.

Real asset operating returns and valuation gains post-inflation, 5-year rolling averages, %



1. These figures reflect the period 2010 to 2020. If this period had begun in 2008, average operating returns would have been 3.7% and average post-inflation valuation gains 1.9% (and total returns 5.6%).

Note: Data availability starting dates: United States, 1970; France, 1979; Japan, 1995; Sweden, United Kingdom, 1996; Australia, Canada, Germany, 1997; China, 2001; Mexico, 2004. Operational returns calculated as net operating surplus divided by produced assets and land.

The global average is an extrapolation derived from a weighted average of ten countries based on GDP.

Source: AMECO; CEIC; Federal Reserve Board; IHS Markit; national statistics offices; OECD; World Bank; McKinsey Global Institute analysis

Operating returns on produced assets vary significantly across the ten countries, from 3 to 4 percent in the European Union and Asian countries we analyze to 6 to 8 percent in Australia, Canada, the United Kingdom, and the United States, and 11 percent in Mexico. Asset portfolios and industry mix only partially explain these differences. For Australia and the United Kingdom, high land prices may skew some of the findings, as land is not typically counted as capital stock used in production even though rents associated with urban land often contribute to capital returns. The high yields in the United States and Canada, however, persist after adjusting for this. This raises questions about market and competitive conditions that foster or inhibit high returns and drive or hamper capital productivity.<sup>18</sup>

### **Declining interest rates and, notably, rental yields were central to increasing asset values**

As net worth relative to GDP has grown in most countries since 2000, interest rates have fallen, particularly in the past decade. Indeed, our analysis found a strong inverse correlation between net worth relative to GDP and five-year rolling averages of nominal long-term interest rates after 2000 in all countries apart from China, Japan, and the United States. In the United States, this is at least in part because of the 2008 financial crisis, which muted real asset prices for a sustained period despite very low interest rates. Japan, meanwhile, had low interest rates throughout the period, leaving little room for further declines.<sup>19</sup> In China, by contrast, net worth grew materially relative to GDP, while interest rates did not see a significant decline over the past decade in the same manner as in our other countries.

Real estate, which, as we have shown, represents two-thirds of net worth, illustrates the basis of valuation gains and their link to interest or discount rates. As home prices have risen, approximately tripling on average across the ten sample countries from 2000 to 2020 (with Japan as an outlier, as home prices there declined), the impact of higher rental income, including imputed rents on property owned outright, was outweighed by sharply decreasing rental yields. Rental yields are a proxy for capitalization rates used by the real estate industry to determine property values based on expected rental income streams.<sup>20</sup> Capitalization rates and, by extension, rental yields typically decline with declining interest rates as financing costs decrease, as well as with expected rent growth. Declining interest rates have hence played a decisive role in rising real estate prices. Additionally, inelastic land and real estate markets meant that changes in interest rates or rental yields drove up real estate prices rather than reducing rents.<sup>21</sup> A long-term view of some real estate markets suggests that valuations today are relatively high by historical standards (see Box E3, “Real estate prices seem elevated from a long-term historical perspective”).

In the United Kingdom, lower rental yields, or higher value-to-rent multiples, accounted for 38 percent of the increase in real estate-related net worth, with rent increases explaining an additional 31 percent; 21 percent of the increase reflects the multiplicative impact or interaction effects of rents and yields rising at the same time. Only 9 percent of that increase was due to net capital investment in maintaining or growing the stock of buildings. A similar pattern holds true, with variation, across countries (Exhibit E10). Australia, Canada, France, and the United Kingdom had the highest growth in the value of household real estate relative to GDP.

**3x**

Average increase in home prices since 2000 in the ten sample countries

<sup>18</sup> See *Getting tangible about intangibles: The future of growth and productivity?*, McKinsey Global Institute, June 2021.

<sup>19</sup> Japan's long-term interest rate in 2000 was 1.7 percent, according to the OECD. Other countries in 2000 had long-term interest rates of at least 5 percent.

<sup>20</sup> Rental yields are defined as rental income in a given year compared to the market value of a home (in other words, the rent-price ratio). Capitalization rates are defined as net operating income of a property divided by the property's market price. Capitalization rates are used to discount future rental income expectations and are a primary metric used by developers and investors to determine the price they are willing to pay for a property. Taking a similar approach, we use rental yields as effective discount rates on rent prices to understand home prices. See also Edward Glaeser and Joseph Gyourko, “The economic implications of housing supply,” *The Journal of Economic Perspectives*, Winter 2018, Volume 32, Number 1; and Edward L. Glaeser, Joseph Gyourko, and Albert Saiz, “Housing supply and housing bubbles,” *Journal of Urban Economics*, September 2008, Volume 64, Number 2, pp. 198-271.

<sup>21</sup> For further discussion of home price growth and broader economic implications, see John V. Duca, John Muellbauer, and Anthony Murphy, “What drives home price cycles? International experience and policy issues,” *Journal of Economic Literature*, 2021, Volume 59, Number 3.

## Real estate prices seem elevated from a long-term historical perspective

According to data from Nobel laureate Robert Shiller, inflation-adjusted home prices in the United States over the past 130 years have mostly moved in line with goods price inflation. However, there were two exceptions to this: beginning in and immediately following World War II and beginning in the late 1990s and continuing through 2006.<sup>1</sup>

Home prices then fell sharply during and after the 2008 financial crisis but have since rebounded to their pre-crisis levels.

An even longer-term view of home prices focuses on the Herengracht canal in Amsterdam dating back more than three centuries to 1650.<sup>2</sup> There,

too, home prices have largely moved in line with inflation over time, and rent prices have largely moved at the same pace as home prices. The Amsterdam data also show a notable increase in real home prices beginning in the 1990s through 2005 (when the data end). Real prices in 2005 were near their late-18th-century peak.

<sup>1</sup> "Online data Robert Shiller," econ.yale.edu.

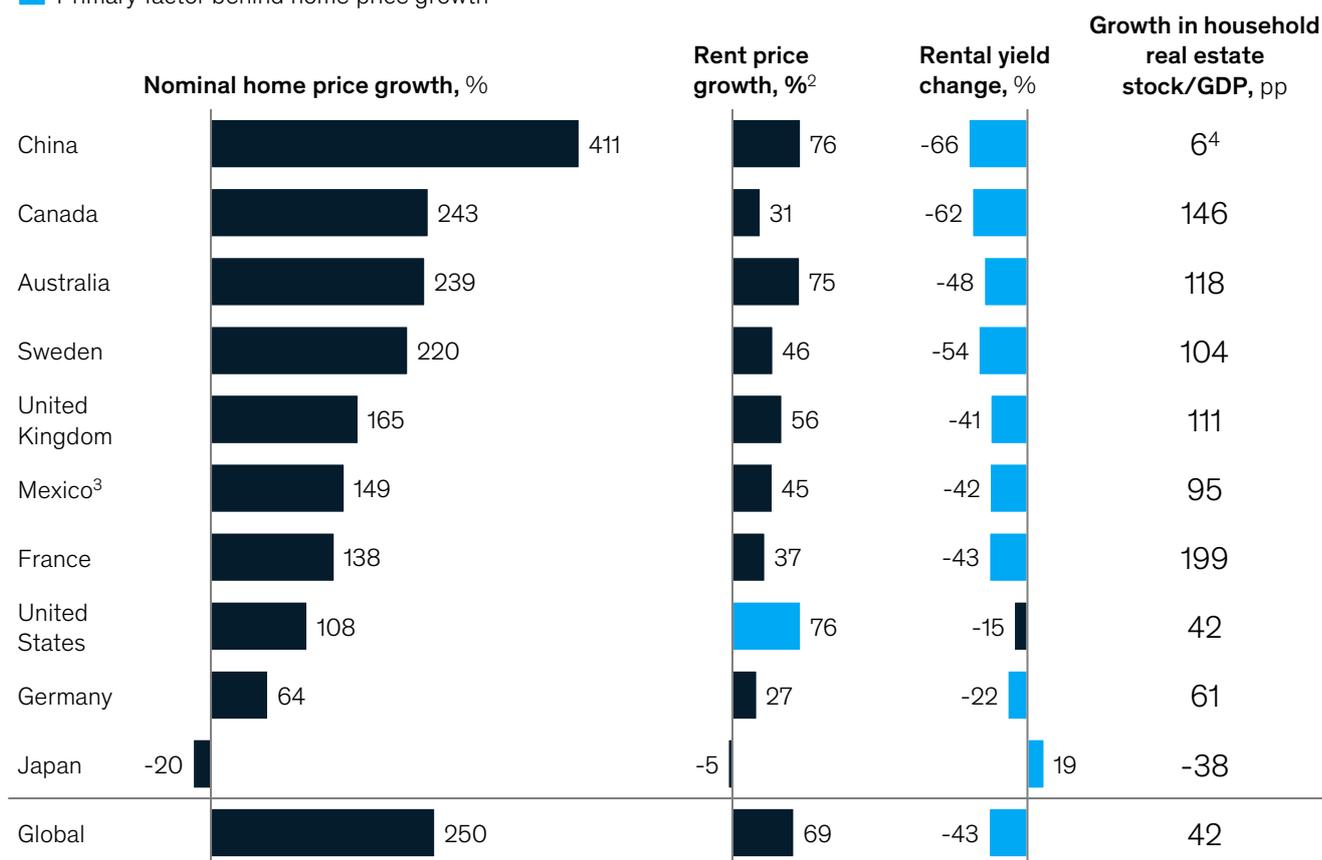
<sup>2</sup> Piet M. A. Eichholtz, "A long run house price index: The Herengracht Index, 1638–1973," *Real Estate Economics*, 1997, Volume 25, Issue 2, pp. 175–92; and Brent Ambrose, Piet M. A. Eichholtz, and Thies Lindenthal, "House prices and fundamentals: 355 years of evidence," *Journal of Money, Credit and Banking*, 2012, Volume 45.

Exhibit E10

## Rising home prices are a function of rent price growth and declining rental yields, with the latter shaping home prices in most countries.

Dynamics of real estate price and stock changes across countries, 2000–20

■ Primary factor behind home price growth<sup>1</sup>



1. Home prices are a function of rental income and rental yields (which are a proxy for capitalization rates used by the real estate industry), wherein home prices are equal to rental income divided by rental yields. Specifically, the percent increase in nominal home prices is equal to the following formula: (% increase in rents – % increase in rental yields)/(1+ % increase in rental yields).

2. Rent prices reflect imputed rent of owner-occupied homes.

3. Mexico's data reflect the period 2005–20.

4. China's overall household real estate stock has grown only slightly faster than GDP, with a growth in GDP multiple of 6 percentage points from 2001 to 2020, even though nominal home prices have grown over 400 percent.

Note: The global average is an extrapolation derived from a weighted average of ten countries based on GDP.

Source: CEIC; Federal Reserve Board; national statistics offices; OECD; World Bank; McKinsey Global Institute analysis

Of the net worth gains tied to real estate at the global level, some 55 percent derived from higher land prices, while 24 percent was attributable to higher construction costs. (The remaining 21 percent was a result of net investment—that is, construction of new homes or improvements to existing ones, less wear and tear.)

**Nearly all net worth growth from 2000 to 2020 occurred in the household sector as a result of growing equity and real estate valuations**

Household net worth grew from 4.2 times GDP in 2000 to 5.7 times GDP in 2020, growth that actually exceeded total net worth growth given net worth declines in the nonfinancial corporate sector, particularly in the United States. Half of household net worth growth in this time frame came from rising equity values, which were most prominent in China, Sweden, and the United States (growth in GDP multiples of 1.7, 1.0, and 0.8, respectively). An additional 40 percent of household net worth growth relates to rising housing values (Australia, Canada, France, Sweden, and the United Kingdom all saw growth in excess of a full GDP multiple). Household net worth also grew as a result of rising deposits that filtered through to them on the back of money creation and stimulus measures (most pronounced in China and Japan, where deposit assets grew by more than 0.5 times GDP). Debt in the household sector kept comparatively steady relative to GDP at the global level, up by 0.2 times GDP, but grew by 0.6 times GDP in China, albeit from very low levels.

At the global level, government net worth did not change much, by less than 0.1 times GDP, although this masks a wide range across countries—from a growth of 0.7 times GDP in China to a decline of 0.7 times GDP in the United Kingdom. Government debt expanded throughout relative to GDP, from 0.2 times GDP in Germany to 1.2 times GDP in Japan. Some governments also saw growth in financial assets, such as equity of state-owned enterprises in China, and real assets, especially in Australia (minerals) and France (buildings and land).

Nonfinancial corporations saw equity liabilities grow at the global level by 0.3 times GDP more than the increase in the real assets backing those equities, particularly in Canada, Japan, and the United States, where equity growth was more than five times larger than real asset growth. Real assets in nonfinancial corporations grew by more than a full GDP multiple in China (particularly in inventories including construction work in progress), France and Sweden (particularly corporate land valuation increases), and Mexico (particularly in commercial buildings and machinery and equipment). China saw the most significant growth in net debt liabilities, with a change in GDP multiple of 0.7.<sup>22</sup> At the other end of the spectrum, Japan's nonfinancial corporations reduced debt relative to GDP.

Financial corporations had minimal change (and near-zero levels) of net worth. Balance sheets, however, grew by roughly two GDP multiples, nearly half of which came from growth in debt assets (mirroring growth in debt liabilities spread across other sectors, and including debt acquired by central banks in asset-purchasing programs). The remainder came from equity and currency and deposit assets, including those from within the financial sector. On the liability side of the balance sheet, nearly all the growth came from currency and deposit liabilities, and some equity growth. The United Kingdom, which had the largest financial corporation balance sheet relative to GDP in our sample in 2020, also saw the greatest growth over the past two decades, by more than 5.5 multiples of GDP.

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<sup>22</sup> Subtracting debt assets to account for intrasector holdings.

## **Financial assets and liabilities also grew faster than GDP, mirroring the growth of real asset values and vastly exceeding net investment**

From 2000 to 2020, total financial assets grew from 8.5 to 12 times GDP, with growth taking place within and outside of the financial sector. Within the financial sector, financial assets grew from 4.4 times GDP in 2000 to six times GDP in 2020. Currency and deposit liabilities within the financial sector, including central banks and commercial banks, in particular saw substantial growth of 96 percentage points. Central bank balance sheets, which are included in the financial sector and reflect many (but not all) of these currency liabilities, expanded collectively from 0.1 times GDP in 2000 to 0.5 times in 2020. Over the same period, central banks in Japan, France, and Germany increased their balance sheets, by 1.2 times GDP, 0.7 times, and 0.6 times, respectively. More than 40 percent of the global increase in financial assets and liabilities relative to GDP between 2000 and 2020 (and about 10 percent of the increase in US dollar terms) occurred from 2019 to 2020 during the COVID-19 pandemic.<sup>23</sup>

Outside of the financial sector, financial assets such as bank deposits, corporate bonds and equity assets, and pensions grew from 4.2 times GDP in 2000 to six times GDP in 2020. Over the same period, debt-to-GDP ratios outside the financial sector grew by 79 percentage points, with substantial variance across the ten countries. (In the total economy, debt-to-GDP ratios increased by 77 percentage points over this period.) This growth in financial assets (and liabilities) outside the financial sector mirrored a similar increase in real asset values.

However, new debt and other liabilities greatly exceeded net investment. Between 2000 and 2020, almost \$2 in debt, or about \$4 in total liabilities including debt, was created for each \$1 in net new investment—and that does not include the balance sheet of financial corporations (Exhibit E11). The country variations were wide, with the amount of debt created for each \$1 in net new investment ranging from just over \$1 in China to nearly \$5 in the United Kingdom. This raises questions about capital allocation and purposeful creation of debt, as well as the sustainability of rising debt in the event of a mean reversion in asset prices.

**For each \$1 of new investment, almost \$2 in debt, or about \$4 in total liabilities including debt, were created between 2000 and 2020.**

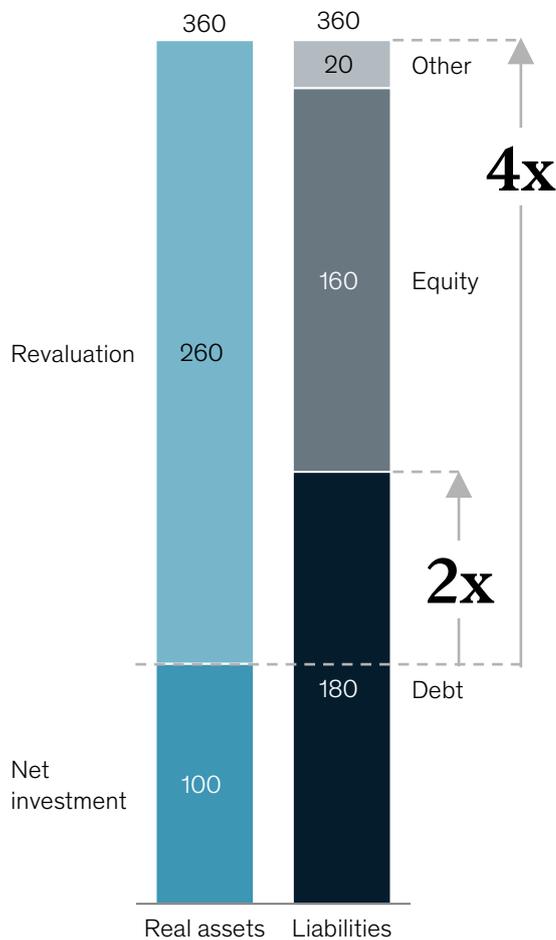
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<sup>23</sup> Central bank data are sourced primarily from the OECD, with supplemental data directly from the central banks in several cases. This includes data for all years from Australia, China, and the United Kingdom, and for 2020 from Canada, France, Germany, and Japan.

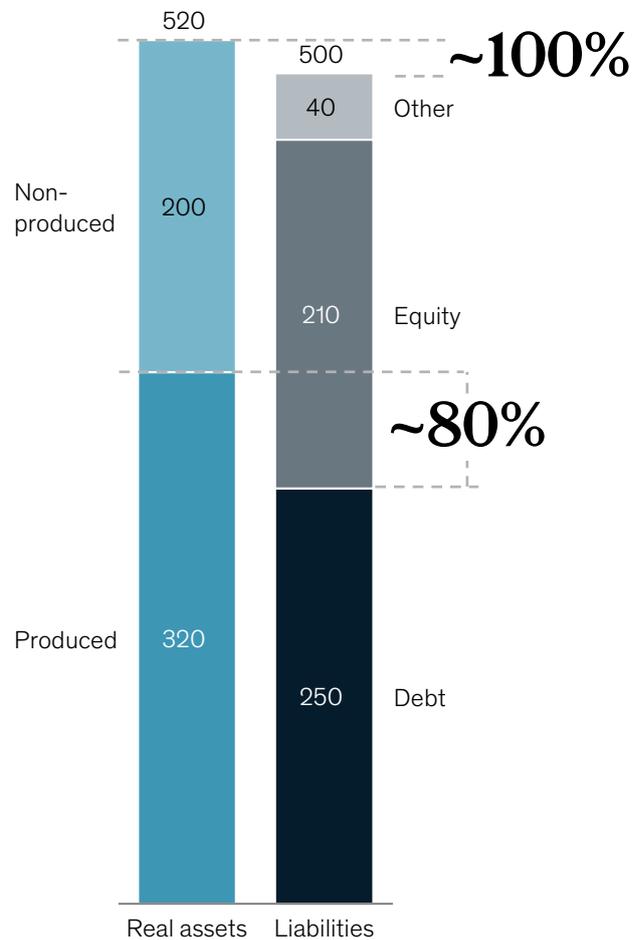
**From 2000 to 2020, almost \$2 of debt and \$4 of liabilities were created for every \$1 of net investment.**

**Global growth and stock of real assets and liabilities**, excluding financial sector, nonconsolidated data, 2000–20, \$ trillion

**Global growth of real assets and liabilities**



**Global stock of real assets and liabilities**



Note: The global average is an extrapolation derived from a weighted average of ten countries based on GDP.  
 Source: CEIC; Federal Reserve Board; national statistics offices; OECD; World Bank; McKinsey Global Institute analysis

While this research cannot provide an answer to debt sustainability questions, it complements well-established metrics such as debt-to-GDP ratios with comparisons of liabilities to assets. For instance, while debt-to-GDP ratios are similar in countries like China, France, and the United Kingdom, loan-to-value ratios, which we define as debt relative to produced assets, vary markedly across these three countries, from 57 percent in China to 98 percent in France to 138 percent in the United Kingdom. Loan-to-value ratios are particularly high in the government sector, with debt often several factors higher than underlying public assets. Despite rising debt, the cost of debt has sharply declined relative to GDP thanks to declining interest rates.<sup>24</sup>

<sup>24</sup> See Olivier Blanchard, "Public debt and low interest rates," *American Economic Review*, April 2019, Volume 109, Number 4.

## Several scenarios are possible, with an imperative to deploy wealth more productively for critical investment needs

There are different ways to interpret the vast expansion of balance sheets and net worth relative to GDP. It could mark an economic paradigm shift, or it could precede a reversion to the historical mean, softly or abruptly. Aiming at a soft rebalancing via faster GDP growth might well be the safest and most desirable option. To achieve that, redirecting capital to more productive and sustainable uses seems to be the economic imperative of our time, not only to support growth and the environment but also to protect our wealth and financial systems.

In the first view, an economic paradigm shift has occurred that makes our societies wealthier than in the past relative to GDP. In this view, several global trends including aging populations, a high propensity to save among those at the upper end of the income spectrum, and the shift to greater investment in intangibles that lose their private value rapidly are potential game changers that affect the savings-investment balance.<sup>25</sup> These together could lead to sustainably lower interest rates and stable expectations for the future, thereby supporting higher valuations than in the past.<sup>26</sup> While there was no clear discernible upward trend of net worth relative to GDP at global level prior to 2000, cross-country variation was always large, suggesting that substantially different levels are possible. High equity valuations, specifically, could be justified by attributing more value to intangible assets, for instance, if corporations can capture the value of their intangibles investments more enduringly than the depreciation rates that economists assume. Rapidly rising levels of debt, in this view, would be supported by higher asset values and low costs of debt, thus not representing a problem.

In the opposing view, this long period of divergence might be ending, and high asset prices could eventually revert to their long-term relationship relative to GDP, as they have in the past. Increased investment in the postpandemic recovery, in the digital economy, or in sustainability might alter the savings-investment dynamic and put pressure on the unusually low interest rates currently in place around the world, for example. This would lead to a material decline in real estate values that have underpinned the growth in global net worth for the past two decades. At current loan-to-value ratios, lower asset values would mean that a high share of household and corporate debt will exceed the value of underlying assets, threatening the repayment capacity of borrowers and straining financial systems. We estimate that net worth relative to GDP could decline by as much as one-third if the relationship between wealth and income returned to its average during the three decades prior to 2000. Assessing scenarios including this reversion of net worth to GDP, a reversion of land prices and rental yields to 2000 levels, and a scenario in which construction prices moved in line with GDP since 2000, we find that net worth to GDP by country would decline by between 15 and 50 percent across the ten focus countries.

Not only is the sustainability of the expanded balance sheet in question; so too is its desirability, given some of the drivers and potential consequences of the expansion. For example, is it healthy for the economy that high house prices rather than investment in productive assets are the engine of growth, and that wealth is mostly built from price increases on existing wealth?

Decision makers could hence work to stabilize and reduce the size of the balance sheet relative to GDP by growing nominal GDP. To do so, they would need to redirect capital to new, productive investment in real assets and innovations that accelerate economic growth.

For business leaders, this would mean identifying new growth opportunities and ways to continuously raise the productivity of their workforce with capital investment that complements rather than displaces their employees. Many corporations have excess liquidity that they could deploy. Sustainability investments, for instance, could turn from a cost to a growth opportunity if framework conditions such as higher carbon pricing were put in place

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<sup>25</sup> Atif Mian, Ludwig Straub, and Amir Sufi, "What explains the decline in  $r^*$ ? Rising income inequality versus demographic shifts," presented at the 2021 Jackson Hole Economic Symposium, Federal Reserve Bank of Kansas City, August 2021.

<sup>26</sup> See also Adrien Auclert et al., *Demographics, wealth, and global imbalances in the twenty-first century*, National Bureau of Economic Research, working paper number 29161, August 2021.

that require higher investment yet keep a level playing field between competitors. Could changes to the way intangibles are accounted for on corporate balance sheets result in higher investment? And how should business leaders think about providing new stores of value, justifying equity valuations and building household wealth?

Leaders of financial institutions could seek to develop financing mechanisms aimed at deploying capital to new growth opportunities while limiting debt creation for asset transactions at ever-rising prices. Also, the global balance sheet is directly reflected on their own balance sheets. Beyond risk assessments, what do the trends of the past 20 years and scenarios ahead mean for their balance sheets and revenue growth? How might they contribute to the evolution of the global balance sheet, and what does it mean for responsible banking?

For policy makers, rebalancing would require removing barriers to investment in glaring gaps in the economy such as sustainability and affordable housing.<sup>27</sup> Tools already exist to achieve this, such as reforming zoning regulations that make real estate scarce; tax levers that alter the taxation of capital and property gains relative to income; and getting more serious about carbon pricing and regulation. Likewise, as financial regulators, they can affect debt levels by changing standards or maximum loan-to-value ratios for the provision of loans or revisiting the tax advantages of debt. Policy makers can also aim to increase their own buildup of productive assets and net worth, starting with better measurement.

A broader question is how to reorient institutional frameworks. Decision makers could develop new metrics decoupled from transaction prices of small volumes of traded assets to measure wealth. The framework governing competition in an era of intangibles and their role in storing wealth could evolve. Pension systems and savings may require new structures to accommodate wealth that has historically grown sustainably only in tandem with GDP yet is now elevated. It could mean adjusting the rules governing financial systems and institutions if savings and investment make up less than one-third of growth in real assets, and most balance sheet growth is linked to rising asset prices.

For business leaders, financial institution leaders, policy makers, and households alike, this research offers a new way of assessing the macroeconomic context in which they are operating and living. It offers a platform for developing scenarios for the future and finding ways to hedge against risks and capture benefits should balance sheets be rebalanced and the economic environment change as a result. And it suggests the importance of working toward a rebalancing by growing GDP and redirecting capital rather than risking a mean reversion in asset prices.

This report lays the groundwork for further research in which we expect to address some of these questions, and we invite comments and insights.

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The global economy over the past two decades has been marked by rapid technological change, as digitization has taken hold across sectors and businesses have ramped up investment in intangible assets. While emerging economies have experienced strong growth spurts, that is not the case for many advanced economies, for whom the 21st century—even before the COVID-19 pandemic—has been a tale of financial crises and uneven recovery, forcing central banks to expand their balance sheets in an unprecedented way, and of extremely low interest rates and inflation by historical standards. Given these conditions, how healthy and resilient is the global economy today as we prepare for another recovery? The balance sheet view we adopt in this report raises important questions about economic priorities, investment, long-term stores of value, and future prosperity.

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<sup>27</sup> See Edward Glaeser and Joseph Gyourko, "The economic implications of housing supply," *The Journal of Economic Perspectives*, Winter 2018, Volume 32, Number 1; and Dag Detter, "How cities can lead the way in bridging the global housing gap," World Economic Forum, June 2018.

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